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REQUIRED A MERCHANT MARINE.

Governor Shaw of Iowa delivered his inaugural address before the assembly on Thursday last. He said, in part:

"Even in this most remarkable century, even famous for its growth and wealth and material prosperity, there is one industry that has failed to increase with the years. I refer to our merchant marine. At the beginning of the nineteenth century we were carrying 90 per cent. of our foreign commerce in American ships. We now carry one-fifth, or 20 per cent. Shall this continue? We are in possession of the Pacific. Shall we build the ships required to its enjoyment? It is as truly ours, if we have the courage of our convictions, as are the islands that rise above its surface. Shall we not cut a passageway to it from the gulf, and develop to the fullest the trade which it has placed within our reach?

"To build a merchant marine will require both time and the same measure of encouragement as the nations of Europe accord those with which we must compete. Never in the history of the world were such opportunities presented to any people as have come to us unsought, unplanned, and, I might say, unexpected.

"Our manufactures and our commerce are limited only by the capacity of the world to consume. The choice is presented of carrying it in American bottoms or buying transportation of Europe. The experience of the war and navy departments of the government during the last two years justifies the hope that the best shipyards in the world will find steady home employment, and that vessels built to fly the American colors will be accessible for all future demands."

CONCRETE BREAKWATER CONSTRUCTION IN JAPAN.

The Japanese government is now constructing a breakwater 4,250 ft. long to guard the harbor of Otaru, on a somewhat novel method. The breakwater consists of a wall 24 ft. wide formed of concrete blocks placed upon a rubble foundation 20 ft. below low tide. These blocks are 5 ft. thick, 24 ft. long and about 10 ft. deep, and weigh 24 tons. They are set at an inclination of 71 deg. 34 min. and are bonded laterally. The blocks are also joined longitudinally by joggles inserted in the form of soft mortar below low-water mark. The breakwater is being built by extending it a block at a time, which is carried to the end on a traveler about 40 ft. high, which runs upon a track laid upon the finished portion of the breakwater. The front end of the traveler is extended cantilever-fashion, so that when the main portion arrives at the end of the breakwater the block of concrete can be carried forward and let down to place. The traveler has its own motive power, a steam boiler, hoisting and driving engines being carried on a platform on the top of the same.

TO COMBINE NAVAL DEPARTMENTS.

An official announcement was made at the Navy Department this week of Chief Constructor Hichborn's opinion of the recommendation made by Secretary Long for the consolidation of the Bureaus of Construction and Repair, Steam Engineering and Equipment. The statement says: "Chief Constructor Hichborn, of the Navy Department, has been erroneously reported as opposed to the recommendation of the Secretary of the Navy that the three Bureaus of Construction and Repair, Steam Engineering and Equipment, should be consolidated under one head. On the contrary, the Chief Constructor has reported that the time is ripe for such a consolidation, and that greater economy and efficiency would result from it."

TORPEDO BOAT BUILDERS.

All builders of torpedo boats for the navy have been granted by Secretary Long an extension of twelve months for the completion of their contracts and delivery of vessels to the government. This action resulted from the unanimous recommendation of the officers at the heads of the naval bureaus. These officers were convinced that the contractors had been sincere in their efforts to complete their contracts within the time specified but that they had been unable to do so because of the inability of steel manufacturers to supply the necessary material. The vessels affected by the action of the department include sixteen torpedo boat destroyers and sixteen torpedo boats, the former to have been delivered within eighteen months and the latter within one year. This also affects the contract for the construction of the submarine boat Plunger.

PROGRESS OF THE NEW NAVY.

The following is the degree of completion of vessels under construction of the U. S. Navy, as shown by the records of the Bureau of Construction and Repair, January 1, 1900: Battleships—Kearsarge, 98 per cent.; Kentucky, 97; Illinois, 73; Alabama, 92; Wisconsin, 84; Maine, 18; Missouri, 1; Ohio, 10. Sheathed Protected Cruisers—Albany, 97 per cent.; Denver, 0; Des Moines, 0; Chattanooga, 0; Galveston, 0; Tacoma, 0; Cleveland, 0. Monitors—Arkansas, 12; Connecticut, 35; Florida, 21; Wyoming, 32. Torpedo Boat Destroyers—Bainbridge, 38; Barrv, 38; Chauncey, 37; Dale, 53; Decatur, 52; Hopkins, 31; Hull, 31; Lawrence, 77; Macdonough, 75; Paul Jones, 60; Perry, 60; Preble, 60; Stewart, 11; Truxtun, 7; Whipple, 7; Worden, 7. Torpedo Boats—T. A. M. Craven, 99; Stringham, 93; Goldsborough, 97; Bailey, 63; Bagley, 4; Barney, 4; Biddle, 4; Blakely, 67; De Long, 67; Nicholson, 45; O'Brien, 45; Shubrick, 74; Stockton, 74; Thornton, 70; Tingey, 42; Wilkes, 23. Sub-Marine Torpedo Boats—Plunger, 85.

GERMAN MARITIME ASCENDANCY.

The Hamburg-American line steamer Deutschland was successfully launched at the Vulcan dock yard last Wednesday in the presence of Emperor William and many notable people. The Minister of Foreign Affairs christened the vessel. In his speech he dwelt upon the powerful development of the Hamburg-American line, which, he said, with the North German Lloyd, had, during half a century, grown to be the greatest shipping company in the world. The new ship added to its fleet, he said, was to run on that high road of North Atlantic traffic which stringed Germany with the United States.

Germany's present trans-oceanic policy and world policy necessarily resulted from her economic growth. Germany felt more and more that a nation which allowed itself to be pushed away from the sea would stand aloof from the busy life of the world. Germany, which long had ceased to be an inland country in the heart of Europe, and which had also become commercially a world power in the front rank of rivalry, must also be strong enough on the sea to guard everywhere German peace, German honor, and German prosperity.

The Emperor listened attentively, frequently nodding his approval, especially when Count Von Buelow said Germany must not be cast down by difficulties and obstacles unexpectedly arising in her path. This evidently referred to the British seizures of German ships.

The Deutschland is a twin screw, 16,000-ton vessel, with engines of 35,000 horse power, and guaranteed to have a speed of twenty-three knots, which her builders claim she will exceed.

REVENUE CUTTERS FOR THE LAKES.

It is likely that strong attempts will be made in the present Congress to have several additions made to the force of revenue steamers for duty on the Great Lakes. Under the terms of our treaty with Great Britain but a single warship can be maintained on the lakes, but it is believed that the construction of revenue vessels will not be held to be a contravention of the treaty.

Already plans for the new revenue cutter authorized last year for service on the lakes have been completed and accepted by the department. The new cutter, when finished, will be the finest type of craft on fresh water, if not afloat, and will cost, all told, \$165,000. The length over all is to be 178 feet; molded beam, 30 feet; depth, 15 feet amidships. The keel is of the flat type, made of plates 14 pounds to the square foot, double thickness and riveted together. Above the main deck the steel will average 10 pounds to the square foot, and the double plates and extra heavy steel construction of frame will make the cutter a formidable little craft if necessary for any active coast service.

The main engine will be vertical, triple expansion, direct acting, with cylinders 17, 27 and 43 inches in diameter and a 24-inch stroke. There will be two single-ended boilers capable of carrying a working pressure of 160 pounds. All of the mechanism is to be of the latest design and so arranged as to give the maximum power with the minimum space utilization. The pilot and chart houses, located directly abaft the foremast, are to be made of steel, and the steering gear will be worked by steam power from both the pilot house and the bridge, with hand gear and other connections in case of accident. The arrangements for quarters for officers and crew are to be more perfect than those on any of the present revenue boats, every convenience being afforded. The mess and dining room arrangements are especially complete.

The Dominion government built two or three handsome little craft in Owen Sound a few years ago and called them fishery cruisers, but they were more like miniature armed rams. The three revenue cutters, Gresham, Algonquin and Onondago, built at Cleveland and sent to the coast were much on the same order, having bow tubes for firing torpedoes, etc. It is possible that a number of similar vessels will be built, but as times are now, about 30 per cent. will need to be added to the former appropriations for these craft.

NEXT SEASON'S YACHT RACES.

The Columbia Yacht Club, Chicago, has sent out invitations for a regatta to be held off Chicago on July 4th next.

There will be no international yacht race off Chicago this year and yachtsmen are preparing for a regatta that will be second in interest only to a contest between Canada and America. The regatta will include races between all the prominent racing yachts in the Great Lakes district.

It is the intention of the Columbia Yacht Club to make the affair the greatest yachting event of the year in this country, and special invitations are being prepared for all known yachtsmen and clubs.

The following clubs have been invited to take part in the big July 4th regatta:

On Lake Ontario—Oswego, Rochester, Royal Hamilton, Royal Canadian, Kingston and Montreal Yacht Clubs.

On Lake Erie—Buffalo, Erie, Cleveland, Ohio, Toledo, Sandusky, Detroit and Citizens' Yacht Clubs.

On Lake Michigan—Green Bay, Marinette, Manitowoc, Milwaukee, Chicago, Columbia and Jackson Park Yacht Clubs.

On Small Lakes—White Bear, Pine Lake, Pewaukee, Lake Geneva, Spring Lake, Nodaway, Minnetonka, Oconomowoc, Fox Lake, Macatawa, Oshkosh, Fond du Lac and Lac La Belle Yacht Clubs.

THE RIVERSIDE IRON WORKS, S. F. HODGE & CO.

Among the oldest of the establishments that have been continuously engaged in business in whole or in part connected with the marine interests is the Riverside Iron Works, conducted at present under the title of Samuel F. Hodge & Co. The original firm, established in 1863, was Cowie, Hodge & Co. That partnership lasted two years, when a new one was formed under the name of Hodge & Christie, which continued till 1872. The business was then conducted under the sole name of Samuel F. Hodge. In 1883 it was incorporated under the present firm name, which it has since retained.

Since its incorporation in 1883 the company has more than doubled its plant, which now consists of foundry, machine shop and pattern shop. The company builds both marine and stationary engines, and the shops are well equipped for jobbing work, especially of the larger class, having large capacity in both foundry and machine shop. Each of these shops is furnished with a 25-ton electric crane, and the rest of the equipment is on a proportionate scale. The shipping facilities are excellent, having both water front and convenient railroad sidings.

In the early days Mr. Samuel F. Hodge, who established the business, did a great deal of mining work; this was done when there was practically nothing in the upper peninsula to go by. Each new mining venture presented problems of its own that had to be worked out, and there was need of a good deal of originality as well as general knowledge and mechanical skill. The mining branch of the business was kept up as an important one until it was gradually overshadowed by the growing marine and local stationary interests.

With the rapid growth of the lake navigation interests in the '70's and '80's the company worked more and more into building marine engines, and probably has more of these running today than any other builders on the lakes, notwithstanding the fact that some of the yards which build the large freighters also build their own engines. No more severe test could be made of the fertility in resource of a firm than has been demanded by the varying requirements of the marine service, and the development of the modern stationary engine. The methods of construction twenty, or even ten years ago, would not at all answer present needs. It is a high tribute to this company that it has not only kept up with the demands of the times, but that its ingenuity has, in many cases, anticipated them.

Some of the work of this company went into vessels that became historic. It furnished the machinery for the famous whaleback Wetmore, the first vessel of that type that went to the coast. That vessel created quite a stir in Liverpool shipping circles, afterwards in Brooklyn, and again at San Francisco and other points on the Pacific coast, which she reached by passage through the Straits of Magellan. They also supplied the engines for the Christopher Columbus, equally famous as the huge passenger whaleback which ran on the route from Milwaukee to Chicago and carried hundreds of thousands of excursionists during the great exposition in the latter city.

Among engines which the company recently built for ocean service are those for the Mae and Porto Rico, the former intended for the Cuban and Porto Rican trade, and the latter running from New York to southern ports. The company has also built a number of yacht engines of the larger class, among others the Enquirer, built for Connors, of Buffalo. This craft was sold to the government during the war, went to the coast and was afterwards returned to the lakes, where she is now in charge of Col. Lydecker, Corps of Engineers, U. S. A., of the engineers' department. M. B. Mills' yacht, the Cynthia, and the Sea Fox, formerly the Azalia, built for the Henkels, but now owned by the Brush estate, were also supplied with machinery by this firm. In the revival of the marine prosperity that commenced last year the company's business has shared, and its managers see good prospects ahead for the coming season.

THE first electric launch to be made on the canals of Venice has recently been delivered there from London. A syndicate composed of a number of local gentlemen has taken the matter up and secured this first launch as a type of what they wish to run for passenger traffic on the canals, subject to the approval of the local authority. The launch, which is called Alessandro Volta, provides accommodation for about fifty passengers. It length is about 56 ft. and width 10 ft. It is equipped with 100 accumulators, and its main speed will vary from seven to nine miles per hour.

SAGINAW RIVER LUMBER OUTPUT.

There was manufactured on Saginaw river last year 224,660,135 feet of lumber, the smallest output since 1865. At the close there was in manufacturers' hands 77,798,930 feet, all of which is practically sold. The yards on the Saginaw river are carrying about 220,000,000 feet.

There was manufactured 17,280,000 shingles and 27,848,000 pieces of lath. Lumber advanced an average of \$5 a thousand during the year. Mills suffered shortage of stock by reason of Canadian prohibitive laws, only 42,575,000 feet of logs coming to Michigan last year as compared with 238,000,000 feet in 1898.

The total product since 1851 has been 23,472,187,157.

BATH'S SHIPBUILDING.

It may surprise some people in shipbuilding circles, remarks an exchange, to learn that Bath, Me., is again as pre-eminently the shipbuilding center of the new world as she has ever been. That, nevertheless, is the fact. During the fiscal year which ended June 30, 1899, Bath built more tonnage (merchant vessels, of course) than any other customs district in the United States; and, more, she built more tonnage than was turned out in any whole state, outside of Maine. Only three districts in the United States turned out more than 20,000 tons of vessels. They were:

	No. of Vessels.	Gross Tons.
Bath	43	46,693
Philadelphia	37	37,625
Cuyahoga (Cleveland)	13	34,467

The district of Cuyahoga, which ranks third, is that in which Cleveland, the principal shipbuilding city of the Great Lakes, is located. In all, there were built in the United States during the year 1,273 vessels of 300,038 tons gross register. In proportion to population, Bath, Me., is the leading ship-owning city of America, there being 12 tons of shipping per person owned in that city. Duluth comes next, with 5.3 tons per person. The total number of vessels owned in this country is 22,728, with an aggregate tonnage of 4,864,238.

DETROIT & CLEVELAND NAVIGATION CO.

While other passenger steamboat lines on the lakes have furnished the conveniences for pleasant all day excursions in different directions, the Detroit & Cleveland Navigation Company, known the lakes over as the D. & C. line, has given a much wider extent to its operations. Its fine, magnificent steamers cover the whole stretch of lake and river route from Cleveland to Mackinaw, traversing the western half of Lake Erie, Detroit river, Lake St. Clair and the river of the same name, and the whole length of Lake Huron. The cities reached by the line are Cleveland, Detroit, Port Huron, Harbor Beach, Oscoda, Alpena, Cheboygan and St. Ignace. The pleasure resorts touched or passed are the islands of Lake Erie and Detroit river, the Flats and the adjacent resorts, and near the northern terminus of the line is the emerald gem of the lakes, the island of Mackinac, famed throughout the country in history and romance.

The service of the D. & C. line will be, in 1900, as it was the past season, in three divisions. Detroit and Cleveland, Toledo, Detroit and Mackinac, and Cleveland, Put-in-Bay and Toledo. The third and shortest of these, operated jointly by the Detroit & Cleveland and the Cleveland & Buffalo lines, consists of night service from May 1 to December 1, and of day service from June 10 to September 10. The night boats leave Cleveland at 10 p. m. and Toledo at 10:30, arriving at their destinations at 6 and 6:30 a. m., respectively. The day boats are timed so as to give from 2 to 3 hours at Put-in Bay on a single day's excursion.

THE SAULT AND SUEZ CANALS.

The lake tonnage that passes through the Sault canal is not only immense in itself, but is vastly greater than that which passes through the famed Suez canal. The following is the record for 1898, the Sault canal being open 248 days, and the Suez canal the whole 365 days: Number of passages Suez canal, 3,503; tonnage 12,962,622. Number of passages, Sault locks, 17,761; tonnage 21,234,664. In the latter case the tonnage was almost all American. In the former the record shows only four American vessels with total tonnage of 3,161. The French, who dug the Suez canal, stand third in the number of passages through it, while the British stand first, with more than two-thirds of the whole.

THE MICHIGAN YACHT AND POWER CO.

One of the old plants in the city of Detroit that had been for a long time vacant has recently started again with very extensive additions. The Michigan Yacht & Power Company have taken 200 feet front on Jefferson avenue, extending back 1,000 feet to the channel bank of the river, directly opposite the Detroit Boat Club property on Belle Isle. The tract includes a substantial structure, which has been put in thorough repair. A number of new buildings have also been erected. The plant now covers a warehouse 25x85 feet, a paint shop 70x30, a shop for small boats 160x40, a planing mill and woodworking shop 60x60, a place 120x40 feet for building iron and steel launches.

The whole plant is furnished with the best of modern appliances, and is unquestionably one of the finest boat building plants in the country. It is equipped with all the facilities for quick repair work, and for fitting out and refitting craft. So far as new work goes, the company is prepared to build anything from a canoe to a 200-foot yacht, and to equip them with gasoline or steam engines. Another feature of the business will be the leasing of water front and dock privileges for yachts and launches, and the river front is being improved for that purpose. The still water on either side of the dock will furnish excellent anchorage and mooring places.

The company, though comparatively new, has in its superintendence and management, men of large experience. In fact, there is not, in a responsible or important position, in any of the departments, a single unsuccessful or inexperienced man. The president and general manager, O. J. Mulford, has been building boats for five years, and has been a yachtsman for 15 years, his experience in the latter capacity having given him a practical knowledge of the working requirements of different classes of craft. The superintendent of the works is the veteran designer and builder, Albert Seymour, known by all yachtsmen, and who has been in the business for 35 years. He has built more small boats and yachts than any other man on the lakes. He has been for the last 12 years superintendent of the Detroit Boat Works, and still has with him in the construction department men who have worked with him for that length of time, and they all speak well of Mr. Seymour, as indeed every one else does who has had anything to do with the competent and genial superintendent.

A MECHANICAL STOKER.

The American Stoker Company, of 141 Broadway, New York, in a circular, states that "the modern steamship of to-day seems to have reached the zenith of mechanical genius and skill, its every function has been improved or wholly revolutionized, but the one all important thing remains the same, and has since the beginning, i. e., the man behind the shovel. He is the uncertain quantity; there is 25 per cent. difference in his work. He is indifferent to all except one thing, the steam pressure carried. The dollars and cents that he unnecessarily shovels in the furnace, concern him little."

The purpose of the American underfeed stoker is to perfect the introduction of coal to the furnace. It feeds the coal to the fire from underneath, and may be considered a gas producer and burner combined.

The coal is fed into the hopper, carried by the conveyor into the magazine, which it fills, "overflows" on both sides, and spreads upon the sides of the grates. The coal is fed slowly and continuously, and, approaching the fire in its upward course, it is slowly roasted and coked, and the gases released from it are taken up by the fresh air entering through the tuyeres, which explodes these gases and delivers the coal as coke on the grates above. The continuous feeding gives a breathing motion to this coke bed, thus keeping it open and free for the circulation of air.

So much interest was manifested by government engineers and others as to the practical working of the American stokers in the steamship Pennsylvania, that a series of tests was ordered and was made by Lieuts. B. C. Bryan and W. W. White, U. S. N., and which proved most satisfactory. A full report of these tests was published in the journal of the American Society of Naval Engineers for August, 1899, comprising in all about 35 pages.

WARRANTS have been sworn out at Philadelphia for the arrest of eight seaman, deserters from the British steamer Archtor, on the ground of violating the new ruling of the Treasury Department which declares that foreign seamen leaving vessels in United States ports, must be regarded as immigrants.

PLANS FOR A NEW ICE CRUSHER.

(Illustrated.)

There is a feeling extant and one that is growing stronger year by year that other routes ought to be opened for winter navigation on the lakes, in fact, lines of communication are being established year after year as witness the Lake Erie and the Green Bay routes.

The inventor of a new form of ice crusher covered by patents in the United States and Canada states in his prospectus as follows:

"For more than thirty years I have been engaged in navigation on the Great Lakes; for about fifteen years the managing owner of a fleet of tugs engaged principally on Lake Superior. I have given great attention to ice obstruction and winter navigation and have long been convinced that with the right kind or form of vessels it was entirely practicable to operate in winter. With this object in view I have fashioned a plow, something like a snow plow or a locomotive, that will run under and lift the ice and throw it out of the way, instead of riding over it and breaking it down. This avoids the resistance of the water, experienced in breaking down, and keeps the ice away from the propeller wheel. With a vessel weighing 3,000 tons, loaded with 5,000 or 6,000 tons of freight, the additional power to break and throw aside, even two or three feet of ice will be imperceptible. I have one tug in the Duluth harbor that will without much difficulty, break and navigate through over two feet of fresh ice in the coldest weather. These vessels will encounter very little ice in the lakes proper. The lakes do not freeze over, even in the coldest weather, except near the shores and the only ice is found in and near the harbors and in the channels of connecting waters. The tugs are designed to keep these open, so that, very little, if any, ice would be encountered there. With three or more vessels and three tugs there never need be found to exceed five or six inches of ice, which would be to these vessels no hindrance whatever.

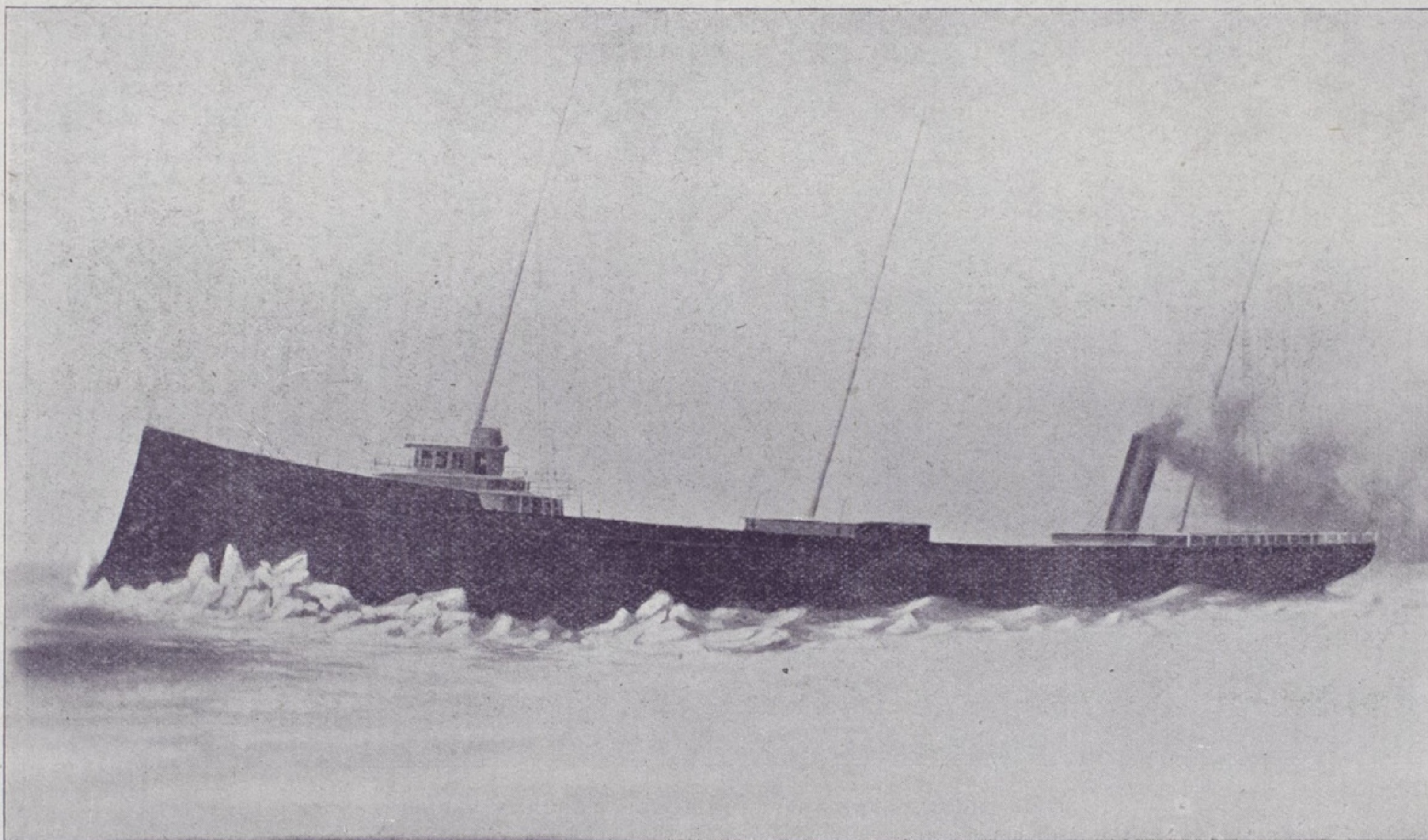
Lake Superior at Duluth seldom, if ever, freezes over before the 15th of February or the 1st of March, and is usually clear again by the 1st of April. Only during the month of March, when the ice is breaking up and forming pack ice, would the boats be hindered, and then not materially. The vessels should go into dry dock once a year to be kept in order, and my idea would be to do this in March and thus avoid the worst period of navigation. Vessels not of this design would not dare undertake to follow, as if they were frozen in they would be powerless to get out. My patents are broad enough to cover any possible method of breaking the ice by a lifting prow. Ice ferries are in constant use during the winter months across Lake Michigan and the Straits of Mackinaw, and winter boats run on Lake Erie. I expect of this to show that the obstacles to winter navigation are not as great as many suppose. The ordinary season of navigation with large freighters is from about April 15th to December 15th, eight months. Without the slightest difficulty these boats will run ten months. The usual length of a round trip from Duluth to Buffalo with a modern vessel is from eight to twelve days, depending upon delays encountered in loading and discharging. Carrying a cargo east and going back light the trips are usually made in eight days, a vessel like the accompanying illustration, designed to carry a large amount of package freight, that is grain or ore in lower holds, and flour, etc., in upper holds going east, and coal in lower holds and merchandise, etc., in upper holds going west should, in the ordinary open season, average a trip in twelve days and in the closed or winter season in fifteen days, but to be conservative I would say an average of two

trips a month for each vessel. The winter freights average nearly 100 per cent. higher than the summer, so if the vessels run but four extra trips yearly, or ten months, the increased earnings would be very large."

The inventor and owner of this type of ice crusher is Mr. Byron B. Inman of Duluth, Minn., and it is proposed to organize a corporation under the title of the Marine Transportation Co., for the purpose of building, owning and operating on the lakes three large steel freight vessels, each having a capacity of about 6,000 tons, to be constructed according to the Inman model and patents, which is designed in the winter season regardless of the ice, as well as in the season of open navigation; also to construct three large steel ice breaking tugs to be used in connection therewith.

The model and plans having been submitted to the Detroit Ship Building Co., builders having great experience in constructing ice ferries, car ferries, etc., is entirely approved by them, and Mr. Frank E. Kirby, their well known and talented consulting engineer says: "A steamer formed with your ice plowing bow would be fully as efficient as ordinary cargo steamers during the usual season of navigation, and would undoubtedly be able to work 25 per cent. longer than without it, say two or probable three months additional. The form does not greatly differ from that of the usual type of battleship bow."

The milling interests in the west and north-west, the owners and managers of grain elevators at Duluth and Superior as well as other influential sources speak in high



THE PROJECTED INMAN ICE CRUSHER.

terms of the advantage and practicability of the project and hope to see the adventure carried to a successful issue.

While these boats are designed to carry bulk freights, and generally will in their lower holds, they are specially intended for the higher class freight as well. The average shipments of flour alone by lake from Duluth and Superior and points tributary, for the past six years have been over 7,300,000 barrels yearly. Two additional months would easily increase this amount to 9,000,000 barrels. This traffic is sufficient to utilize a fleet of thirty such vessels at profitable prices. The mills of Duluth and Superior alone can supply 1,500 tons per day, and for the sake of having the extra winter navigation, in which season they are at a disadvantage, they offer to give these vessels the preference at current rates in summer season. Minneapolis and other northwestern mills could likewise be induced to give preference to this line for a similar reason, and thus insure a larger, steady and profitable traffic.

U. S. NAVAL ATTACHE BEEHLER, who attended the first annual meeting of the Society of Naval Architects at Berlin, expresses the opinion that the German Department of Naval Construction is now superior to the naval schools at Glasgow and Paris, and advises the United States government to send our naval constructions there rather than to Great Britain and France.

THE BURGER SHIPYARD.

While many of the wooden shipyards about the lakes show the encroachments of steel in shipbuilding through enforced idleness, that of H. B. & G. B. Burger at Manitowoc, Wis., continue to give evidence of activity, which is owing in a great measure to the thorough and practical methods followed at that yard. During the past year three steamers have been contracted at their yard, the largest one, Robert E. Burke, to the order of Peter Barry and Joseph Lemoreau of Chicago, to be operated by the former owners of the Independent Tug Line. She is 95 feet over all, 21 feet beam and 8 feet depth. She was launched in November and will be used extensively as an excursion boat along the Chicago lake front, but is now doing city civil work.

Two other steamers being constructed for Thomas Bradwell of Chicago, are duplicates, 85 feet long, 18 feet beam and 8 feet depth of hold. They will also go into the excursion trade along the lake front at Chicago and will go into commission in the spring. Messrs. Burger are also building a dredge to the order of Charles Simons, of Two Rivers, Wis., the dimensions of which are, length 78 feet, beam 30 feet and depth 8 feet. In addition to this new work they have also some extensive repairs this winter on the Sitka, Olympia, Georgia, Yakima, Hesper, Maurice B. Grover, Spokane, Thomas Davidson, Raleigh, Walter Vail, Aberdeen, Baltic, and many others, the Lawrence Loring received about \$3,000 worth of repairs.

The Goodrich line steamers will also receive due attention at their yard. A new enterprise which the Messrs. Burger contemplate is the enlargement of their dry dock to 420 feet, 85 feet width at the top and 60 feet at the bottom, and 16 feet deep. This increased dry dock capacity will be appreciated by owners and masters of the larger class of vessels.

MR. G. W. DICKIE, manager Union Iron Works, San Francisco, had a complete comprehension of the subject on which he was writing the other day, although he voices a different sentiment and harps on a truer string than we have generally been contented with or accustomed to hear. Mr. Dickie says: "A good deal has been written in regard to the superiority of American workmen; but I think more is due to the manufacturing system than to the superiority of the workmen in this country. In fact, I believe the system of production in the United States aims at dispensing, as far as possible, with the necessity of skilled workmen. Every year we are finding it more and more difficult to obtain skilled workmen that can do general work in an engineering establishment; and in such branches of engineering as shipbuilding and marine engine building, good men are harder to get than they are in Great Britain. In fact, the majority of those employed in the shipbuilding trades in this country come from the British yards; and they can do no more here than they did at home."

The various maritime, commercial and trade organizations of Philadelphia last week sent to Congress a joint memorial, which began by stating that "the Weather Bureau of the United States is an institution of great benefit to the country and worthy of being given a most stable organization and liberal extension, and closed as follows: "We respectfully submit that a continuation of the West Indian bulletin service and an extension of the Weather Bureau of the United States to meet the rapidly growing needs of commerce will be highly appreciated." The Maritime Exchange also sent a memorial to Congress favoring Senate Bill No. 732, which is for a change in the system of the lights on steam pilot boats, so that it will be similar to that used on British pilot vessels and which has been found to be effective.

BETHLEHEM FORGINGS FOR RUSSIAN WARSHIPS.

(Illustrated.)

We show herewith a view of one of the quadruple-throw crankshafts forged by Bethlehem Steel Company for Russian cruiser "Variag", the metal being what is known as their standard grade of open-hearth shafting steel, guaranteed to possess an elastic limit of not less than 35,000 lbs. per square inch, with good elongation.

The forgings of which this is a type were produced under heavy hydraulic presses at the Bethlehem plant, and, after being carefully annealed, were finish-machined complete and fitted together there as shown. They are similar to the shafts made by the same company for the Russian battleship "Retvizan", both vessels being built at the Cramp yards in Philadelphia, as already noted by us.

In addition to these forgings, the Bethlehem Works furnished all the straight shafts for both ships, together with the engine columns, crossheads, piston-rods and connecting-rods, the last two types being made of oil-tempered nickel steel, to give special physical qualities.

All of this material was subject to the specifications and test prescribed by the Russian Marine Ministry, and was produced under the personal supervision of navy officers detailed by the Russian Government for this purpose, and who were stationed at the Works during manufacture of the parts in question.

Such work as this is only another illustration of the confidence with which foreign governments regard American products, and in this connection, it is interesting, as well as a reason for national pride, to recall that the contracts for these two ships were secured in the face of keen competition on the part of foreign shipyards and manufacturers. But, although the work is of such high class, it may be said to be a matter of ordinary routine at the Bethlehem plant, which is equipped with such complete facilities that the company is enabled to meet successfully the most rigid specifications known to modern science.

CLAPTRAP.

In a sensational demand for a big navy, the New York Journal has alleged that the lake cities would be absolutely at the mercy of the enemy's gunboats in case of a war with England. "This is the rankest of claptrap," says the Chicago Times-Herald. "The cities named are in no more danger from British war ships than is Rochester, Syracuse or any other inland city of New York State. It can safely be said that the British war ship that gets through the Welland canal after war has been proclaimed would never float in salt water again. The assembling of a hostile British fleet at Montreal, where deep water navigation ends, would be a signal for an American assault on the Welland canal. Before a British squadron could reach even Lake Ontario it would have to run the gauntlet of the St. Lawrence river which skirts New York State for a hundred miles, and in that distance there is no less than fifteen canal locks, the destruction of any one of which would bring the squadron to a halt." The Chicago Times-Herald readily grasps the logic of the situation and very properly sits down on the old time chestnuty pooh-bah of interlake naval engagements. The New York Journal is evidently living over the Commodore Perry age again and making news out of century old precedents.

THE harbor of Marinette, Wis., will be kept open this winter by the ice crusher Algolah, with a view to shipping grain east from St. Paul and Minneapolis via Sturgeon Bay canal.

ANNUAL LOSS OF WORLD'S SHIPPING.

Not many people appear to be aware of the large extent to which the replacement of tonnage is required for the mercantile marines of the world in consequence of losses at sea by wrecks, collisions, and otherwise. Lloyd's Register has recently issued a statement which makes this loss very clear, and from which it would appear that the loss from different causes for a single quarter is at the rate of over 1,000,000 tons a year for the twelve principal maritime countries, being about one-half of the total tonnage constructed throughout the world in the year 1898, when the new tonnage was greater than in any previous year. Nearly one-half of the whole loss is accounted for by wrecks, and the rest is due to vessels being abandoned, condemned, burnt, foundered, collided, and missing.

CHEAP SHIPS, OWNERS AND SAILORS.

The tendency of British sailing-ship owners to sell their vessels to Norwegian, German, and other foreign buyers seems to be on the increase. The ships transferred are not merely old and well-used ones, which are generally sold to Norwegians, who are able, owing to the less restricted laws of Norway, to make use of them under conditions which are impossible to British owners. If such only were the case, there would be nothing to call for special comment; but among the vessels sold recently was a modern sailing ship of

NOTES.

THE superintendent of the Naval Observatory reckons ship shape when he says: "There can be no question of opinion as to the date of the commencement of the twentieth century any more than there can be a question of opinion on any other matter of simple arithmetical fact. The twentieth century commences with the first day of January 1901."

THE five proposed routes for cables across the Pacific are described in the February Scribner's by Herbert Laws Webb, an electrical expert, who points out the difficulties which surround such an undertaking, and the conditions of success. The article is of particular importance at this time, when several bills are before Congress to lay a Pacific cable.

A BOAT with a flexible propeller shaft has been built by a Berlin firm. It is a small pleasure boat with a naphtha engine, the shaft to the propeller passing through a curved steel tube leading over the stern of the boat. This curved tube carries both the propeller and a rudder moved by a tiller. The whole of the apparatus can be fitted to any small pleasure boat very quickly.

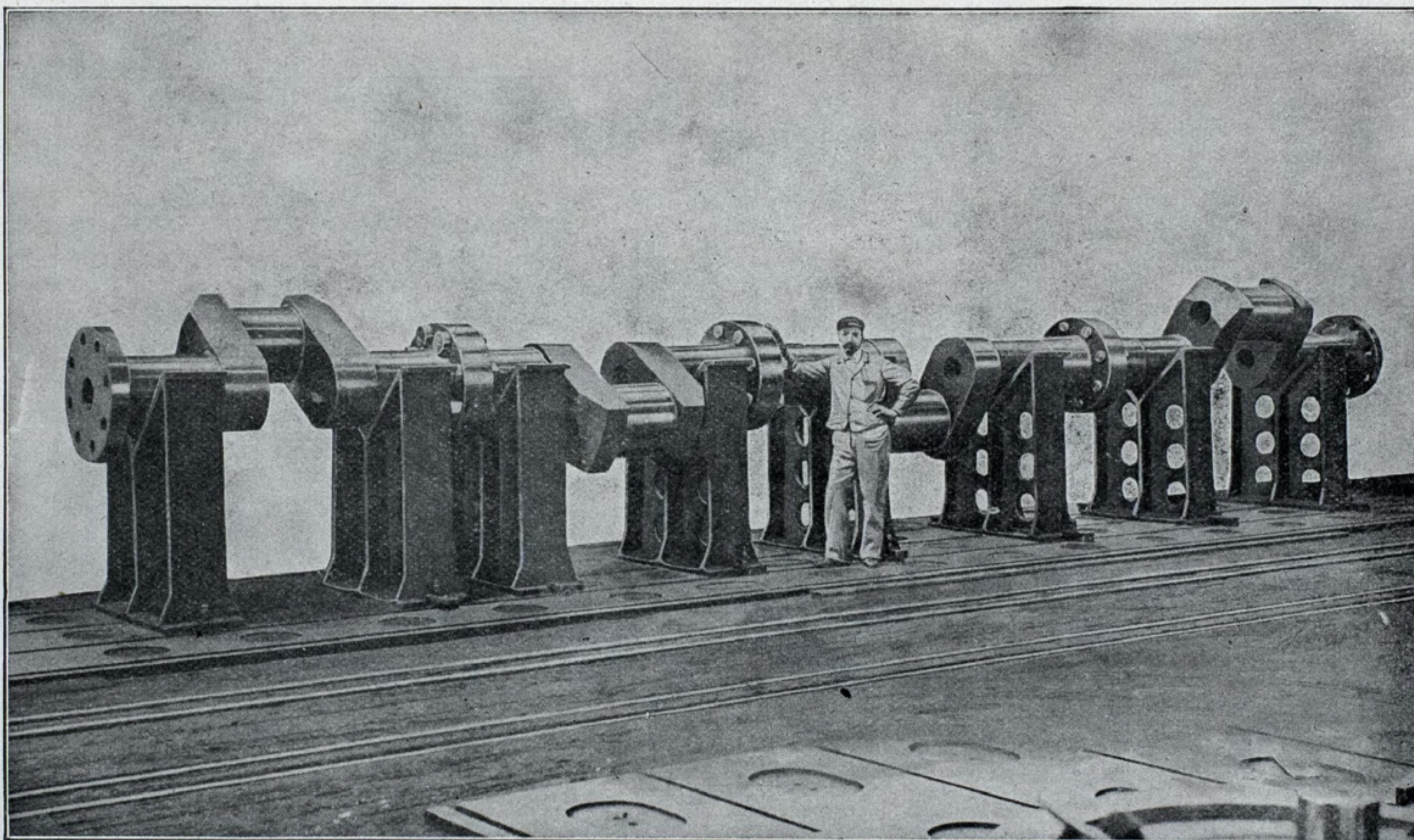
RIPARIAN rights, including the right to the soil between ordinary high and low water mark as incident or appurtenant the adjacent land, are held, in *Waverly Water-Front Imperial and D. Co. vs. White (Va.)* 45 L. R. A. 227, to pass by a virtue of the Virginia statute extending the rights

to low-water mark, although the conveyance is in terms made "to high-water mark," unless the deed manifests a clear intention to control the operation of the statutes. This case has an elaborate annotation on the subject of title to land between high and low water mark.

THE number of British vessels alone that entered and cleared with cargoes and in ballast at ports in the United Kingdom during 1898 numbered 652, 283 with a tonnage of 169,949,278. The number of foreign vessels that entered and cleared for the same period amounted to 61,054 with a tonnage of 30,898,778. The tonnage of British sailing and steam vessels that entered and cleared with cargoes and in ballast at ports in the United Kingdom engaged in foreign trade only amounted in 1898 to 64,216,728 tons while the tonnage of foreign vessels amounted to 26,747,238 tons.

EASTERN people are slow in catching on to the western enterprise, especially in lake navigation matters. A photograph of the Sainte Marie ploughing through the ice in Mackinac Straits was sent to Harper Bros. not long since with some descriptive matter with a view to publication. It was returned with a rather plain intimation that it was a fake picture, and with the suggestion that the artist had a very lively imagination. Yet it was a photograph of an actual scene.

Is the day of ocean sailing craft about to return, in a measure? According to a recently published report, it appears that the French are going in extensively for big sailing ships instead of steamers. The Ateliers and Chantiers de Normandie, Rouen, built four sailing vessels during the year, and the Ateliers and Chantiers de la Loire, Nantes, nine. However, the work on hand in the Rouen establishment is even more to the point, for it includes two sailing ships, each of 2,630 tons displacement; nine ships, each of 3,080 tons displacement, and two four-masted sailing ships, each of 3,750 tons. As a matter of fact, France produced in 1899 more sea-going sailing ships than all the rest of the world and is likely to make another record in 1900. This however is on account of the extra bounty or subsidy given for building sailing vessels.



FOUR-THROW CRANK-SHAFT FOR RUSSIAN CRUISER VARIAG.

Composed of two pairs interchangeable cranks. Manufactured, finished and fitted complete by Bethlehem Steel Company.

Total length of crank shaft, 35 feet 1 inch; outside diameter of pin, 17½ inches, and of shaft, 16¼ inches; diameter of hole in pin, 8 inches, and in shaft, 7 inches. Total weight of crank shaft, 32,216 pounds.

2,932 tons, built and equipped with the latest improvements, a ship which, with its great carrying capacity and comparatively small cost for maintenance, might have been expected to be a source of profit to her original owner. The fact seems to be that Scandinavians and Germans, to whom British sailing ships are mostly sold, are able to run them on more economical principles, both in regard to the rates of pay and the maintenance on board of the officers and crew, than are possible under the British flag.

"PROF. ALEXANDER Agassiz of Harvard, who is now engaged with a Government ship studying the bottom of the Pacific Ocean in its deeper and unexplored portions," the Columbus Press-Post observes, "reports in a letter written from the Island of Tahiti that his soundings and dredgings wholly confirm the earlier conclusions of scientists that at these great depths there is practically no life, either animal or vegetable, because of the absence of light, and the continual cold. It is a place of changelessness and death. Even the destructive processes of fermentation and oxidation that go on elsewhere, and result in ceaseless change in substances of all kinds, are wholly lacking there. This being true, the hull of a ship sinking into one of these great valleys of the deep, will be in exactly the conditions it is when it goes down for ages."

AUTOMATIC RELEASING HOOK FOR BOAT'S DAVIT TACKLES.

(Illustrated.)

The subject of launching ships' boats and the demand for the most approved appliances with which to perform this perilous work was brought prominently to the front, and made one of the chief subjects for discussion before the society of naval architects and marine engineers at their last annual session in New York.

The importance of the adoption of the best appliances, both in the form of davits with which to swing the boats and the gear for detaching them, was made manifest in a paper read before the society by Mr. John Hyslop, of New York.

Mr. Hyslop's experience in several disasters, where the loss of life was appalling owing to the lack of improved appliances with which to handle the boats, and his ability to discuss the subject appeals to those having these matters in charge in the construction, management and handling of vessels, and should cause them to consider this part of a vessel's equipment one of the most important features. On the contrary, however, in many instances the greatest attention is given and money spent on less valuable appointments.

The traveling public are not usually well versed in these matters, and the want of proper appliances to launch the

the purpose of rescuing the crew of a vessel in distress, equipped with the standard automatic releasing hooks. A device that has proved itself free from all the objections mentioned above, and possessing the necessary requirements to make a mission of this kind a success. The advantages claimed for this device are, simplicity of construction, made of a metal which is non-corrosive, requiring no oil or attention to keep it ready for use, reliable automatic, and the mode of reeving the falls makes it impossible for one end of the boat to detach without the other, irrespective of which end strikes the water first. It is so placed in the boat as to be easy to get at at all times, and can be hooked on in the roughest sea, or darkest night without danger of injury to the hands of those hooking it on. With this device a boat can be lowered and automatically detached while the vessel is under full speed.

The United States Government has recognized the merits of this device to the extent that it has applied it to the boats of vessels in all its departmental marine branches, and the number of vessels that are equipped with it, both steam and sail, on the coast and lakes, and the daily receipts of orders indicates that its use will soon become universal.

THE committee of Lloyd's Register, after careful consideration of the arrangement required by the retirement of

TO PROMOTE CANADIAN COMMERCE.

The Canadian canal system, opening the St. Lawrence route to vessels of 14 feet draft from the sea to the head of Lake Superior, with a number of other minor canals, may be considered a measure for the promotion of the Canadian merchant marine. It has had little effect in this direction hitherto, on account of two circumstances: first, that the Welland canal extending deep-water navigation from the upper lakes as far as the head of the St. Lawrence canal system was completed to 14 feet depth long ago, while some of the St. Lawrence canals have continued until this year to be of practically not more than 7 feet draft at low water. The consequence has been that the Welland canal simply afforded an outlet to the United States tonnage from the upper lakes to Ogdensburg or Oswego. The tendency was aided by the admission of American vessels to the canal on equal terms with Canadian vessels, which had always been the practice of the Canadian Government, and which was perpetually secured by the terms of the Washington treaty of 1870. These terms, of course, only apply to through freights, and do not extend to participation in carriage of local freight, which is subject to the navigation laws. These circumstances will be altered, as far as the first cause is concerned, by the completion this year of the St. Lawrence canals to equal depth with the Welland canal.



STANDARD AUTOMATIC RELEASING HOOK FOR BOAT'S DAVIT TACKLES.

boats in time of disaster is only made apparent when the necessity for their use arises.

There are many devices now in use for the purpose of lowering and freeing boat's from a ship's side, that will satisfactorily perform their work in ordinary times, when the conditions are favorable, and when properly operated. Many of them are complicated in construction and become inoperative on account of rust, paint and ice, and they are so placed in the boats as to be difficult to get at to oil and keep free from ice.

There are so many styles in use that seamen require special drilling for each kind of device in order to successfully operate them.

The greatest difficulty has been experienced in obtaining a device that will reliably perform its work in time of necessity and when the conditions are invariably most unfavorable.

It would seem that in the construction of all devices the essential feature of hooking on has been overlooked. The records are numberless where boats have been swamped alongside and lives lost through the inability to attach and hoist out quickly, not to mention the fingers that have been jammed and lost in the vain effort to hook the boat on.

The above illustration represents a boat being lowered for

Mr. Benjamin Martell from the position of chief surveyor to the society, have appointed Mr. Harry J. Cornish to be chief ship surveyor. For many years Mr. Cornish has been Mr. Martell's chief assistant. He has a very intimate knowledge of all the manifold details connected with ship construction, as well as all the important functions which are fulfilled by Lloyd's Register. Mr. James T. Milton remains chief engineer surveyor, and Mr. George Stanbury becomes chief assistant to Mr. Cornish.

THE figures for last year's traffic in Portage Lake waterways, furnished by Major Sears, Corps of Engineers, U. S. A., in charge of the conservancy and improvement of rivers and harbors within that district shows a big increase over 1898. The total clearances were 2,442, besides tugs and small local craft. Net freight, upbound, 886,648 tons; down, 403,663; this being nearly as heavy tonnage as passing through the "Soo" canal fifteen years ago. The total number of passengers carried was 34,714. The estimated value of freight passing through the canal last season is \$54,994,843.70, copper leading, with net value of \$24,588,800. The total copper shipments were about 11,000 tons less than the preceding season, owing to heavy rail shipments. These official figures place Portage Lake canals among the most important artificial waterways of the world.

The equal privileges given by the Washington treaty will then apply to the whole navigation from Lake Superior through the River and Gulf of St. Lawrence. But it is expected that Canadian shipowners will be encouraged to construct and operate larger tonnage for the extended route to the Canadian seaboard, now made accessible to vessels of 14 feet draft.

WANTED—A MERCANTILE MARINE.

Mr. A. M. Thackara, U. S. Consul, Havre, France, in a special report to the Department of State, says:

"The United States has acquired a mastery in the agricultural and mechanical industries. Yet to deliver the products of her farms and workshops to foreign customers, she has to depend to a great extent upon rival vessels. It is estimated that over \$200,000,000 are paid annually for the transportation of American wares over the seas. Of this amount, less than 10 per cent. is received by our own carriers. The time has come when a great nation like the United States should check the stream which is flowing into the coffers of foreign competitors and turn it to the advantage of our shipbuilders and shipowners. This can be done by building up a merchant navy flying the American flag, which will give our exporters shipping facilities equal to the increasing volume of American trade."

AIR PUMPS FOR SUBMARINE DIVERS.

(Illustrated.)

A great advance in the comprehensiveness of air pumps for divers has been made by the introduction of one that will supply one diver in deep water, or two divers in water of more moderate depth. Divers often realize the advantage it would be if they could fit out a second man for some special work where the services of two men would facilitate the work and by use of the pump we illustrate, manufactured by Andrew J. Morse & Son, 140 Congress St., Boston, Mass., it is made possible to supply one diver with more air than is possible from any other style, and have the advantage of being able to supply the second diver from the same pump, which presents an opportunity for economy in the first outlay, and saving of labor; two men at the pump being able to supply two divers with all required air.

Were any special commendation needed of the merits of this pump it would be found in the fact that it has been made the standard for use in the United States Navy, and Messrs. Morse & Son have supplied sixty seven of this style, together with the accessories to make complete outfits for two divers, to the Navy Department, and have also furnished several sets to the Japanese Navy.

As the outfits for naval use are very elaborate, Messrs. Morse & Son have made a combination of this pump with such an outfit as found necessary for general use, and it has met with great favor at the hands of contractors, divers, and wrecking companies, and is offered at a price that will enable all divers to avail themselves of its many advantages.

A line to the manufacturers will secure an illustrated catalogue showing this new outfit, as well as five other styles, ranging in capacity from forty to one hundred and fifty feet of water.

AMERICAN STEAM COLLIERIES.

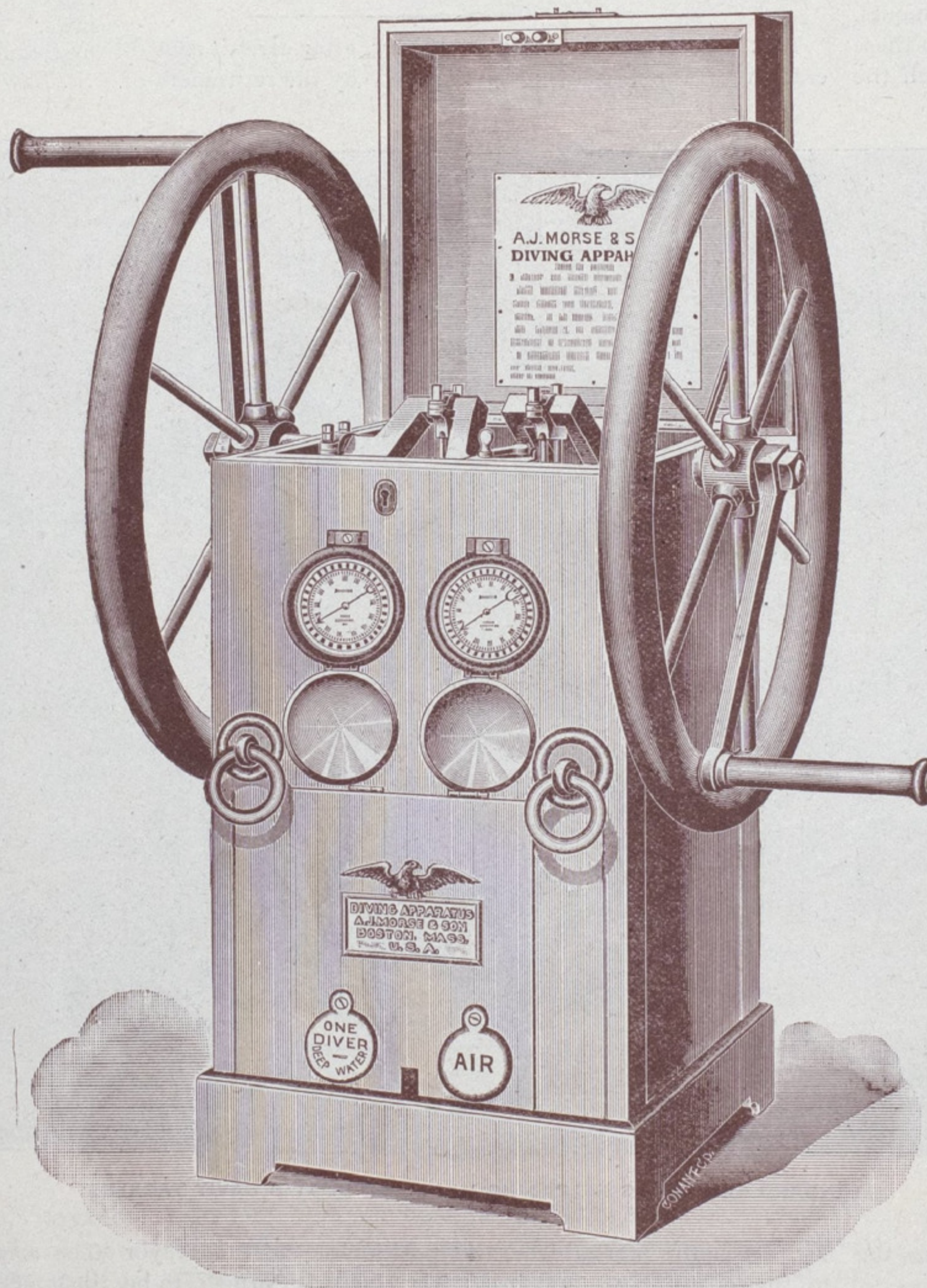
Considerable interest attaches to the collier *Pleiades*, which the Maryland Steel Company put into the water at Sparrow's Point, Md., the latter part of December. A sister vessel, the *Hyades*, will be launched about a month hence. These are the first vessels of their kind to be built in the United States. At Baltimore local interest in the launch of the *Pleiades* was due to the fact that she is the largest vessel as yet constructed on Chesapeake bay. These colliers, which are building for the Boston Tow Boat Co., will cost in the neighborhood of \$300,000 each. They are of steel, 340 feet in length, 47 feet beam, and 27 feet depth of hold, and each will carry about 5,000 tons of coal. The vessels have 8 feet sheer forward and 3 feet sheer aft. Each collier has seven bulkheads, of which six are watertight. The vessels are schooner rigged; each has two steel pole masts and fitted with hand steering gear; one tank of a capacity of 500 gallons for the crew, two tanks of 3,000 gallons each in the engine room and two hand fire pumps. Each vessel is fitted with triple expansion engines with cylinders of 21, 35 and 56 inches in diameter and 42 inches stroke of piston. A working pressure of 170 pounds, and a piston of 700 feet per minute is provided for. The high and intermediate pressure cylinders are of the piston valve and the low pressure cylinder of the slide valve type. The crank shaft is steel forged in two pieces—the built up type. The Scotch type boilers are each 14 feet in diameter by 10½ feet in length and fitted with Morrison furnaces. Each vessel has a full equipment of Blake pumps and the auxiliary machinery includes four Williamson double drums and a Williamson steerer. Two 20 foot metallic life boats and one 18 foot dinghy will be provided for each vessel. The engines, which are capable of developing 1,500 indicated horse-power, are expected to drive the collier at a speed of ten knots per hour.

The British Consul at Theodosia states the Russian Government is desirous that a dry dock should be constructed in one of the Black Sea ports capable of accommodating the largest steamers in the Russian mercantile marine. It is stated that the government prefers that this undertaking should be taken up by some private firm or company, and the concession would be given to any private firm that could guarantee that the undertaking would be carried out.

DECADENCE OF THE FRENCH MARINE.

The Marseilles Society for the Defense of Commerce, in an official report to the late Parliamentary commission, attributed the decadence of the French marine first and foremost to the competition of Great Britain and Germany, whose ships are built and equipped at lower cost than is possible in France. It says:

Great Britain has coal and iron at lower prices than France, and with its innumerable shipyards and machine shops, can produce tonnage on terms with which our builders are incapable of competing. Not only are the ships supplied at lower cost, but they are supplied more promptly. Furthermore, Great Britain exports annually 30,000,000 tons of coal, and thus gives its outgoing ships a cargo, while with us we are less and less able to furnish an outgoing cargo, although the lowering of freight rates necessitates a constant increase of tonnage. After the British and Germans, the Norwegians occupy an important place in international transportation. The existence of their ships is due to the fact that Norway possesses a large maritime population which knows only the sea and is satisfied with low wages.



Thus, that nation exploits enterprises wholly out of proportion to the commerce of the ports to which they are attached.

The marine department of the Board of Trade has full control over the merchant marine of the United Kingdom and where that department can not harass the shipowner sufficiently, local dock and port rules, by laws and ordinances fill his cup of business misery to the brim. The lot of a British shipowner is not an enviable one as his vessel when in a British port is a good deal like a released convict, under government surveillance all the time, and the officials are usually pretty "sassy" at that too, while the owners and his employees must eat humble pie and be mighty considerate as well as acquiescent when these inspectors are around for they have power to detain ships in cases where the load line or other acts are insufficiently observed; have the superintendence of crews and are examiners of provisions; grant certificates to duly qualified masters and mates; appoint courts of inquiry in cases of collision and wreck, and in general supervise all British vessels entering any home port.

THE CLEVELAND-CLIFFS IRON CO.

The Cleveland-Cliffs Iron Co., with its sub-companies, namely, The Cleveland Iron Mining Co., The Iron Cliffs Co., Pioneer Iron Co., Excelsior Iron Co. and Michigamme Co., have been mining iron ore in Lake Superior since 1850.

They shipped the first full cargo of iron ore that ever came down from Lake Superior to Lake Erie ports. The year 1900 will witness the fiftieth anniversary of the Cleveland Iron Mining Co. During its lifetime, therefore, it has seen the Lake Superior iron ore industry rise from its very commencement to its full glory of the present year, wherein was shipped something like 19,500,000 tons of iron ore.

The total amount of iron ore produced and shipped by these companies up to the present time is about 12,500,000 tons, or nearly one-tenth of the total amount shipped from the Lake Superior region. That the Cleveland-Cliffs Iron Co. practically keeping pace with the total production of the Lake Superior region is evidenced by the fact that it expects to market during 1900 between 1,400,000 and 1,500,000 tons of iron ore.

The Cleveland-Cliffs Iron Co., also owns in common with the Pittsburg & Lake Angeline Iron Co., the Lake Superior & Ishpeming railway, with the termini at Ishpeming and Marquette. This railway carried in 1899, 1,420,000 tons of ore.

In addition to this property there is also owned six steel steamers and one wooden schooner with an annual carrying capacity of 550,000 tons of ore. These vessels are not, of course, capable of carrying the total product of the mines, but in addition to them there are seven other large vessels controlled by stockholders in the Cleveland-Cliffs Iron Co. and managed in its office, making fourteen vessels in all, which are capable of hauling nearly all the ore shipped by water by these companies.

These companies have always had their operating office in Cleveland, O., and among its presidents have been some of the most prominent men in the city, namely, Selah Chamberlin, William J. Gordon, George Worthington and Samuel L. Mather.

The present officers are: William G. Mather, president and treasurer; J. H. Sheedle, secretary; and R. C. Mann, auditor. The officers of the companies in Michigan are as follows: M. M. Duncan, agent, in charge of the mines and minerals department, Ishpeming, Mich.; Austin Farrell, manager of the Pioneer furnace department, Gladstone, Mich., and Samuel Redfern, agent, in charge of the land department, Negaunee, Mich.

The total number of men employed by the company in all its various departments is about 2,000. The mines are all situated in Marquette county, at Michigamme, Ishpeming, and Negaunee. The Cleveland officers are in the Mercantile National Bank building.

A JUST REIMBURSEMENT.

Senator McMillan has written the secretary of the Lake Carriers' Association that he proposed to amend his bill now pending so as to reimburse the association for all the money it has expended in lighting the waterways of the Great Lakes. The association has spent about \$20,000 in the last six years. The Senator's bill as introduced would only repay money spent in lighting the channels subsequently lighted by the government. The association has always maintained lights on the Canadian side of the channels, which is something the government can't do, and the bill as amended will authorize the Light-House Board to contract for a continuance of this lighting. It will also reimburse the association for lights maintained on the upper St. Mary's river at the place where the government has not yet been able to establish lights because it could not get a good title to the site.

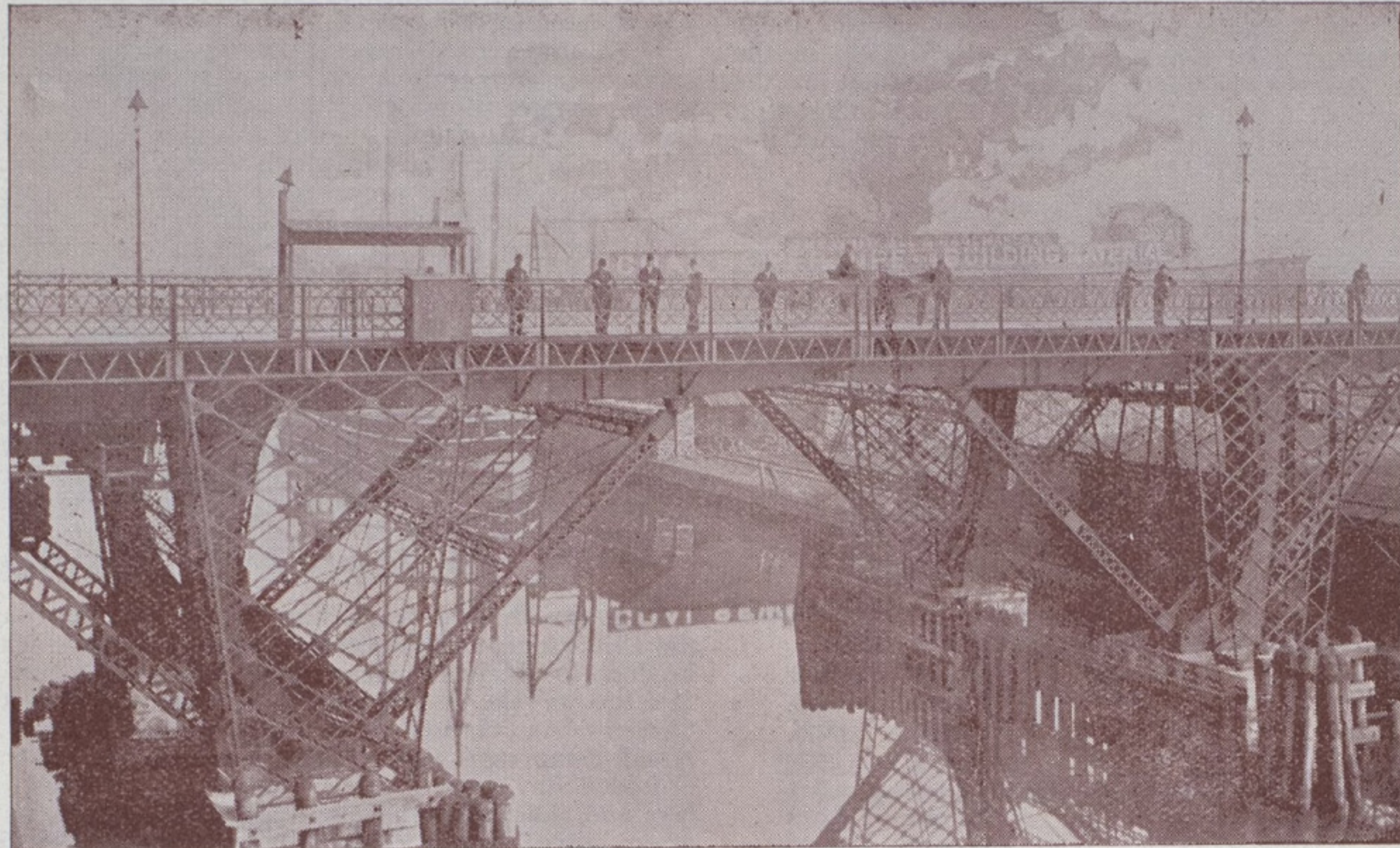
The past season has been a profitable one for vessel men who were not tied up with season charters. In fact, it was the best for many years. Not alone have the vessel men done well, the tug men shared in the wide-spread prosperity. The underwriters have done better than for a length of time. The outlook for 1900 is for a prosperous season. Vessel and tug men have lived in hope for something better than to see each succeeding season close with little or no profit. But it came at last, and everything has a bright look. Immense quantities of ore and coal are to be shipped, and craft of all kinds will be fully employed.

CORRIGAN MCKINNEY & CO.

The River Furnace & Dock Co., of Cleveland, with an annual capacity of 80,000 tons, is a branch industry of the firm of Corrigan, McKinney & Co. The company also owns the Charlotte furnace at Scottsdale, Pa., with capacity of 70,000 tons per year. The following iron mines are owned and operated by this firm: Crystal Falls, Lincoln, Lamont, Great Western, Paint River, Armenia, Lee Peck, Hope and Quinnesec in the Menominee range; Colby, Ada, Federal and

ters, which recommends the regulation of the Lake Erie level by controlling the discharge through the Niagara river by a system of fixed weirs, built near the head of the Niagara river, and a series of sluices to be operated in connection with them so as to control the discharge of the lake, and reduce the variation of its level to a small amount.

This will, of course, entail the erection of wing dams on the St. Lawrence to make Lake Ontario ports and the St. Lawrence channels navigable. It is a scheme to throw all



THE SIXTEENTH STREET LIFT BRIDGE, MILWAUKEE.—CLOSED.

Patented by M. G. Schinke, Assistant City Engineer.

Comet in the Gogebic range. The estimated output for this year, for this group is 200,000 tons of standard Bessemer and manganese ores. The output for the Menominee group will be about 700,000 tons. The Commodore in the Mesaba range, will yield 500,000 tons of high grade Bessemer of very coarse texture. The Lorain and Star West mines are being opened up in the Marquette range, and are expected to produce largely the coming season.

It has been recently announced that this furnace and the well known iron mining firm recently secured a lease of the Ropes gold mine, six miles north of Ishpeming.

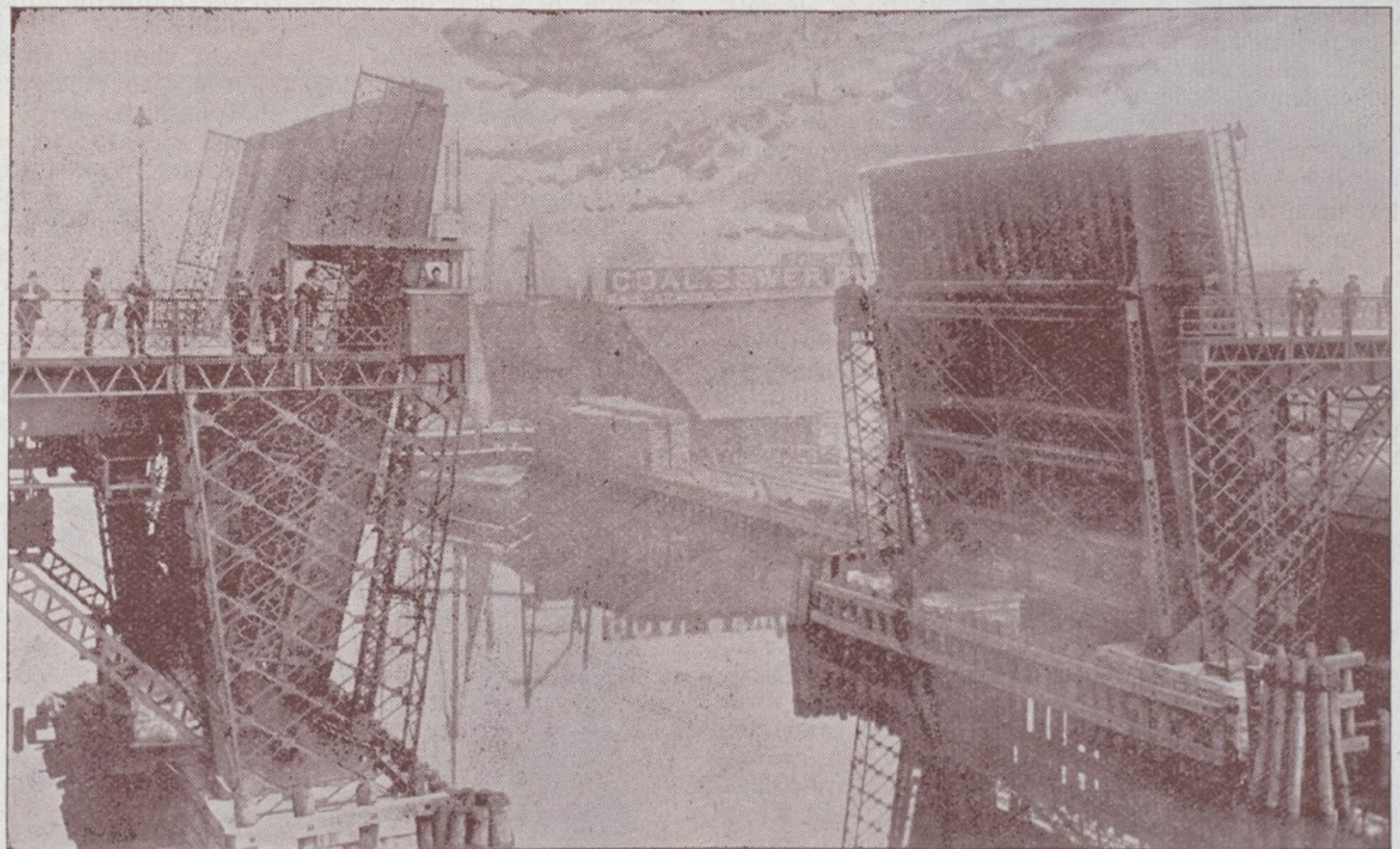
The company, it is said, will not only reopen the mine, which is over 1,000 feet deep, and has produced \$750,000 in gold and silver, but will rework the old tailings, estimated at 150,000 tons and carrying an average value of \$4 per ton in gold and silver, practically all of which can be saved at merely nominal cost.

ST. LAWRENCE LEVELS.

The Chicago drainage canal was opened January 2nd. The water should have been let in December 1st, but workmanship and legal delays made themselves felt. The Canadian Engineer, Toronto and Montreal, says: It was to be hoped that these delays would continue. Not that we wished to have the people of Chicago supping sewage as has been their wont these many years, nor drawing all their liquid supplies from Milwaukee, as we fear there is danger, but if the St. Lawrence is to be maintained at anything like its present level and our costly canals to be available, the people of Chicago must still continue to receive their present filthy water supply of which their own analysis constantly report "unusable." The engineers appointed by the United States Government to enquire into the probable effects of the opening of the canal state that the lake levels will be reduced by at least six inches and perhaps three feet. We have not alarmed ourselves here in Canada hitherto about this matter because we knew that what we suffered in loss of harbors and ship channels would be small in comparison with the loss of such towns as Buffalo, where each inch of deficiency in the harbor costs one million dollars for dredging, but a new danger threatens us, and we must now take measures to protect our interests, and that at once, before our all too friendly Government of Ottawa has fallen into the trap which has been set for the Canadian interest. It is contained in the report of the engineers, designated to make surveys and examinations of deep waterways and routes between the Great Lakes and Atlantic tide wa-

the loss of level due to the new canal onto Lake Ontario and the St. Lawrence. The dams will make whatever level is determined upon permanent, but whatever loss is due to the diminished flow will fall on the St. Lawrence. But more serious than that, in both its first cost and its disastrous delays, would be the absolutely necessary dam and locks below Montreal at the foot of Lake St. Peter.

The Chicago drainage canal may not ruin the Canadian lake and river towns and cities, and if it does it also de-



THE SCHINKE PATENT LIFT BRIDGE, MILWAUKEE.—OPEN.

troys many great cities of the United States. But the Chicago drainage and the Niagara dam together mean the absolute ruin of Montreal as an ocean port. It will be no more an ocean port than Lachine or Valleyfield, and Buffalo will maintain its position as the chief centre of the grain carrying trade.

It is said that Mr. Huntington's purpose is to establish a plant at Newport News where battleships may be built without going outside of the establishment for any part of them.

SHIPPING AND MARINE JUDICIAL DECISIONS.
(COLLABORATED SPECIALLY FOR THE MARINE RECORD).

Competency of Witness—Evidence.—One who owns a vessel, and has owned others, is competent to express an opinion as to her value before her injury. *Michaud vs. Grace Harbor Lumber Co.*, 81 N. W. Rep. (Mich.) 93.

TOWAGE—DUTIES OF THE TUG.—A vessel which undertakes to tow other boats must see that the tow is properly made up, and that the lines are strong and securely fastened. *Tilley et al. vs. Beverwyck Towing Co.*, 61 N. Y. Supp. 495.

SHIPPING—DEMURRAGE.—Compensation may be recovered by the owner of a vessel for unreasonable detention thereof, though the bill of lading contain no demurrage clause. *Jameson vs. Sweeney et al.*, 61 N. Y. Supp. 498.

Evidence—Damages—Speculation of one who had made no examination of a vessel, as to whether it would be possible to tell the extent of her injuries, is not admissible on the question of damages. *Michaud vs. Grace Harbor Lumber Co.*, 81 N. W. Rep. (Mich.) 93.

LIABILITY OF FREIGHTER.—The freighter is liable to the owner of a vessel for unreasonable delay in discharging the cargo, on failure of the consignee to pay therefor, notwithstanding an agreement between the consignor and consignee that the latter should unload. *Jameson vs. Sweeney et al.*, 61 N. Y. Supp. 498.

Contributory Negligence.—The master of a vessel, which was injured by the giving way in a high wind of a snubbing post in a dock, cannot, as a matter of law, be held guilty of contributory negligence, in that he failed to do what he could after it began to give way, which was at 9 o'clock at night; all the lines being out, and the captain testifying that he could not get to them after dark. *Michaud vs. Grace Harbor Lumber Co.*, 81 N. W. Rep. (Mich.) 93.

Docks—Defects—Injury to Vessel—Assumption of Risk.—The defect in a dock, whereby a vessel got loose in a high wind, being the improper bracing underneath of a snubbing post, and it not appearing conclusively that the prior acquaintance of the captain with the dock was such that he must have known of the defect, though he had used it on other occasions, and the owner of the dock having assured him of its safety, the question of assumption of risk is for the jury. *Michaud vs. Grace Harbor Lumber Co.*, 81 N. W. Rep. (Mich.) 93.

NOTICE TO MARINERS.

LIGHT-HOUSE ESTABLISHMENT,
OFFICE OF THE LIGHT-HOUSE INSPECTOR, 9TH DIST.,
CHICAGO, Ill., Jan. 13th, 1900.

Notice is hereby given that the Point Peninsula light-station, Green Bay, Michigan, has closed for the winter.
By order of the Light-house Board.

F. M. SYMONDS,
Commander, U. S. Navy, Inspector 9th Light-house District.

In adopting the Miller system of coaling at sea the Navy Department will only be obliged to recompense the inventor thereof in the event of a favorable report on the scheme by the naval board of inquiry. It is not anticipated that this device for coaling by aerial trolley will be brought into operation save under stress of war. If one of our big war ships should ever get into a tight place with coal bunkers stripped the Miller coaling system would unquestionably repay on the spot its original cost to the government. As an adjunct to a complete equipment of permanent and widely distributed coal supplies for the navy the value of the new device scarcely admits of question. This device is made solely by the Lidgerwood Manufacturing Co., New York.

IMPORTANT ANNUAL ADDRESS OF THE PRESIDENT AND BOARD OF MANAGERS OF THE LAKE CARRIERS' ASSOCIATION—THE BUSINESS OF THE YEAR SUCCINCTLY REPORTED AND RECOMMENDATIONS MADE FOR FUTURE ACTION—ONE OF THE ABLEST DOCUMENTS EVER SUBMITTED TO THE ASSOCIATION.

To the Members of the Lake Carriers' Association:

The Board of Managers of the association submits herewith its annual report of the proceedings and operations of the association during the past year.

MEMBERSHIP AND TONNAGE.

The year just closing has shown a very gratifying increase in the tonnage of the association. The total tonnage enrolled on the books was 760,866, an increase of 75,000 tons over the tonnage of the preceding year. The following shows the comparative tonnage of the association for a series of years beginning 1894:

1894	590,000 tons
1895	618,000 tons
1896	722,863 tons
1897	687,237 tons
1898	686,014 tons
1899	760,866 tons

The tonnage for 1899 is about 40,000 tons greater than in 1896, heretofore the best year in the history of the association. It should be remembered that the increase of 75,000 tons which 1899 shows over 1898, was obtained without a large increase of tonnage on the Great Lakes. At the end of 1898 a large fleet of vessels was sent from the lakes to the Atlantic coast. The new tonnage coming out during the season of 1899 was not so large as in some previous years and some of it came out so late in the season that it will not appear on our rolls until next spring. The handsome increase is all the more pleasing because it has been obtained by inducing tonnage to join the association which has not heretofore been connected with it. The large fleets of James Davidson and the Ogdensburg Transit Company, both of which were members of the association in 1896 have not been members of the association during the present year. Otherwise the tonnage would have shown a still more gratifying increase.

An analysis of the tonnage figures for 1899 shows that of a total tonnage of 760,866 tons, 596,016 tons were made up of vessels of over 1,200 tons, paying tonnage dues of three cents per ton, and 164,850 tons were comprised of vessels less than 1,200 tons, paying tonnage dues of two cents per ton. The increase in tonnage of 1899 over 1898 is made up almost entirely of the larger vessels, the tonnage of the smaller vessels for 1898 and 1899 being as follows: 1898, 163,562 tons; 1899, 164,850 tons. It is a gratifying fact that the association has been able to maintain its tonnage of small vessels in 1899 in spite of the large number of this class of boats which left the lakes in the fall of 1898. It is a well known fact that these boats which were sent to the coast in 1898 were largely smaller vessels belonging to fleets which contained a considerable number of large vessels. This fact is reflected in the tonnage figures. In 1898 only 58,359 tons of the association's tonnage was comprised of fleets entirely composed of small vessels. In 1899, 77,678 tons was comprised of fleets composed exclusively of small vessels. In other words, the loss of the small vessels belonging to large fleets, which were sent to the coast in the fall of 1898, has been made up by inducing numerous individual owners of small vessels to put their boats in the association for the first time.

FINANCES.

The Treasurer's report will be submitted to you, showing the receipts and expenditures of the association during the past twelve months. Although it will not show that the association is entirely free from debt, it is the most gratifying statement that the Treasurer has been able to make for several years. The total amount of dues that have been collected this season is \$21,582.92, showing an increase of \$3,883.79 over last year. At the time of the last annual meeting there were unpaid liabilities of \$3,348.43, and there were uncollected dues amounting to nearly \$1,000. In other words, at the time of the last annual meeting the Treasurer's report showed a deficit of about \$2,500. At the present time the total unpaid liabilities which the Treasurer reports shows only \$400.00. The dues have been more successfully and promptly collected this season than ever before in the history of the association. There are no dues remaining unpaid. In other words, the association has, during the past year, very nearly cleaned up the debt which has been standing against it and carried over from year to year since the large expenditures connected with the Detroit bridge matter in 1896.

The Treasurer's report shows that the association has been subjected to a very large extra expense during the past year on account of the shoveling strike at Buffalo. To meet these expenses the Executive Committee of the association voted that the sum of three cents per thousand bushels should be added to the price for shoveling grain at Buffalo and Erie the extra three cents per thousand bushels to be paid over to the Treasurer of the Lake Carriers' Association to defray the expenses of the association in connection with the shoveling strike. The Treasurer's report shows collections amounting to over \$3,500.00 from this source, and while the very high freights which have prevailed on the lakes during the past season have tended to decrease the amount of grain carried in competition with

the rail lines, so that the revenue from this source is not quite so large as expected, nevertheless it has been of material assistance in enabling the Treasurer to make a more satisfactory financial statement than for several years past. The extra charge of three cents per thousand bushels collected from vessels on grain carried to Buffalo was asked from owners only as a temporary emergency measure. It seemed the most equitable way of meeting a special need. The large expense incurred by the association at Buffalo was for the benefit of vessels engaged in carrying grain, and the three cents per thousand was paid only by vessels engaged in that trade and exactly in proportion to the amount of grain which they carried. The association cannot, however, expect to ask special payments from vessels engaged in special trades on the lakes except under very extraordinary circumstances, and the vessels in the grain trade deserve the thanks of the association for the willingness with which they have accepted the suggestion of the Executive Committee and paid the special tax imposed upon them.

OPERATIONS OF THE SHIPPING OFFICES.

Shipping offices have been maintained by the association during the past year at Cleveland, Chicago, South Chicago, Buffalo, Ashtabula, Toledo and Milwaukee. A condensed report, taken from the annual report of Chief Shipping Master Rumsey, shows the number of men shipped through the various offices during the past season in comparison with former years, as follows:

Year.	Number of men.
1899	16,681
1898	16,508
1897	13,139
1896	11,838

The following table shows the number of men shipped through each office in 1899 as compared with 1898:

Offices.	Number of men. 1899.	Number of men. 1898.
Cleveland	3,886	3,799
Chicago	3,195	2,911
South Chicago	1,981	1,914
Buffalo	2,117	2,003
Ashtabula	2,400	2,358
Toledo	1,298	1,112
Milwaukee	1,804	1,718

The total expense of maintaining the shipping offices during the past season was \$10,648.07 about 42½ per cent of the total expenses of the association. The cost to the association during the past year for each man put on board of vessels by the shipping offices was about 64 cents, as compared with 65 cents in 1898.

GRAIN BILL OF LADING MATTER.

The committee appointed at the last annual meeting to consider the desirability of effecting some changes in the grain bill of lading was composed of L. C. Waldo, Chairman; H. Coulby, J. J. H. Brown, A. W. Colton, Dennis Sullivan, David Vance and A. B. Wolvin. This committee made a report in executive session at the last annual meeting, in which they proposed the following amendments to the grain bill of lading:

First.—Vessel not to be liable for shortage in excess of one-half bushel per thousand, but not to receive overage; vessel to collect freight on actual out-turn.

Second.—The consignee to furnish elevator to begin unloading within twenty-four hours after report of arrival, or pay demurrage at the rate of one-twelfth of the freight less unloading charge, for each twenty-four hours' delay.

Third.—Delivery to the party to whose care consigned to be good delivery, exempting the vessel from further liability.

Fourth.—Shipper to furnish an elevator to commence loading within twenty-four hours after report of arrival, or pay demurrage thereafter equal to one-twelfth of the freight less unloading charge, for each twenty-four hours or part thereof.

It was felt that the vessels were entitled to some relief from the serious delays which they had suffered in waiting for elevators to load or unload grain, and that the shortage clause to which vessels have been subject on the lakes was a hardship not generally borne by other carriers, either by rail or water, and therefore not one to which lake vessels ought to be subject. The proposed changes in the grain bill of lading aroused, as might be expected, strong interest and strong opposition from other parties interested in the grain trade. The changes proposed were quite radical and interfered with trade customs which had grown up. It was argued also by exporters that they introduced uncertainty into the expense of moving grain by lake, which would interfere with the close figuring on exporting business which they considered necessary to hold the business for the lake route. After the Committee on Grain Bill of Lading reported to the annual meeting, the members voted to continue the committee with power to consult and confer with the other interests involved and agree upon a new grain bill of lading, to go into operation at the opening of navigation in 1899. After the adjournment of the annual meeting, the committee proceeded carefully to collect all the facts relating to the amounts of shortages and overruns, the extent of delay to which vessels have been subject, and the causes thereof, and in general to prepare themselves to argue their case at a conference to be held of all interests. Such conference was finally arranged and held in Buffalo on March 7th, 8th and 9th, 1899. At this conference the following parties were represented: Lake Carriers' Association, by its Executive Committee and Committee on

Grain Bill of Lading; western shippers by delegations from the Duluth Board of Trade, Chicago Board of Trade and Toledo Produce Exchange; the grain exporters and merchants by strong delegations from the New York Produce Exchange, Philadelphia Commercial Exchange, Buffalo Merchants' Exchange; Buffalo elevator owners; trunk lines by their general traffic managers or other authorized representatives. Each section of the report of the Bill of Lading Committee was taken up and discussed at great length. At the close of the discussion the matter was referred to a committee of sixteen, containing representatives of all the different interests connected with the grain trade. After nearly two days' consideration, this committee submitted its report, which report with its recommendations was adopted by the general conference.

The Buffalo conference early developed the fact that both trunk lines and grain merchants very strenuously objected to the changes proposed at the annual meeting of the Lake Carriers' Association. It was also made clear that they fully realized the hardship which vessels had suffered under the practice that had prevailed in former years, and it was agreed all around that the lake carriers were entitled to redress, but that it should be sought in a manner least objectionable to the other interests. One obstacle in the way of better service at Buffalo appeared to be a lack of co-operation between the elevators at that port. There had been no elevator association in Buffalo in the year 1898, and the delay in unloading cargoes had been much increased from that cause. The Buffalo conference at one time adjourned to permit a meeting of the elevator owners of that city, and at that meeting the preliminary steps were taken to re-form the Western Elevating Association, which has been in operation during the year 1899.

The final action of the Buffalo conference was as follows:

That the Buffalo trunk lines be allowed ten days from the adjournment of the conference to determine what could be done to obtain the elevator facilities at the port of Buffalo for the lake vessels, and that in the meantime the Lake Carriers' Association should suspend action upon its proposed demurrage clause; that a system of arbitration be provided for cases of special hardship to vessels from delays and shortages; that a proper clause be inserted in the grain bill of lading releasing vessels from liability when they have delivered "order" cargoes to the party in whose care they were consigned and taken an agreed form of receipt; that all grain should be consigned to an individual consignee and not to an elevator or a railroad company.

Pending action by the trunk lines on these recommendations, the Buffalo conference adjourned. Subsequently the Buffalo elevators having rail connection and doing nearly all the business at that port, re-established an association, and each trunk line designated a considerable group of elevators at which their grain might be delivered in Buffalo. The Western Elevating Association appointed a committee of three, known as the Committee of Control, whose special duty it was to provide good dispatch in unloading grain vessels at the port of Buffalo, and to secure as far as possible the full facilities of the port to vessels arriving there with grain cargoes. The trunk lines and grain merchants expressed a wish that this system be given a season's trial before the prevailing practices in the grain trade be changed by changes in the bill of lading. Under these circumstances, the Executive and Bill of Lading Committees of the association met at Cleveland on April 11th, 1899, and practically accepted the offer of the trunk lines and grain merchants. The action agreed upon at the Cleveland meeting is as follows:

First.—Each vessel owner may, if he so desires, at the time he charts the vessel, provide for an individual consignee at lake destination, and he may stipulate that if his vessel is sent to more than two elevators to load the extra service shall be without expense to the vessel.

It is believed that delays at ports of loading may thus be remedied to a great extent.

Second.—The following provision should be included in all lake grain bills of lading:

"If the grain covered by this bill of lading is consigned in care of a party at destination of vessel, then, unless the original of this instrument is there presented for cancellation on or before arrival of vessel, delivery to the party in whose care the grain is consigned herein, shall be a good and valid delivery."

Third.—The Lake Carriers' Association accepts the offer of the commercial exchanges tendering the services of their respective boards of arbitration without expense to the Lake Carriers' Association, to hear and decide any claims the Lake Carriers' Association may desire so heard and decided, in respect to any exceptional detention for which the lake carrier deems it just that demurrage should be paid by the party or parties responsible for such detention, or in respect to any exceptional grain shortage for which the lake carrier claims he should be relieved from liability.

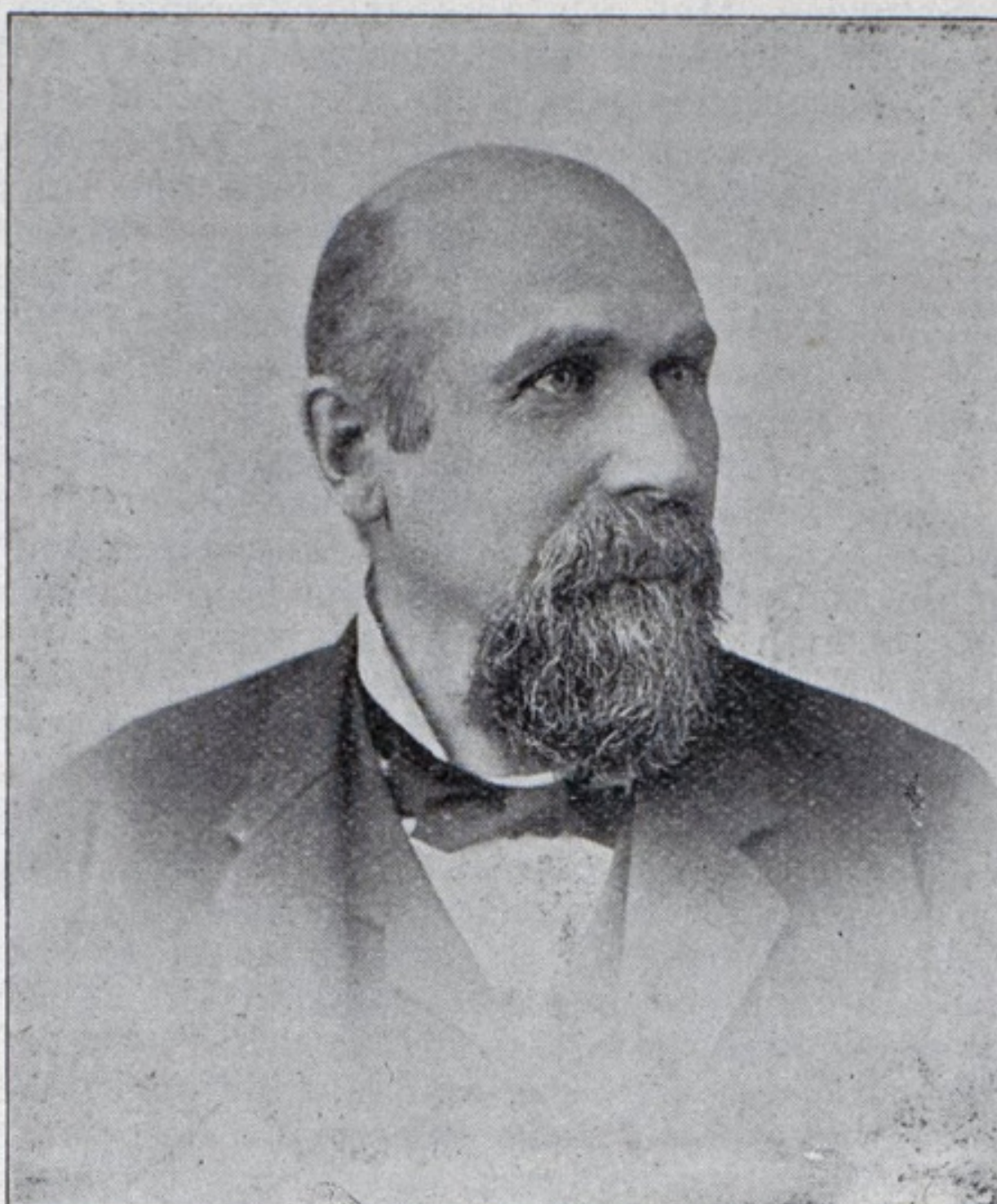
Fourth.—The Lake Carriers' Association will appoint a committee of three of its members, resident in Buffalo, to act in consultation with the Committee of Control, provided by the Western Elevating Association, in securing prompt dispatch in unloading grain vessels at the port of Buffalo.

Fifth.—The grain trade having objected to the shortage clause which the Lake Carriers' Association proposed to insert in the lake grain bill of lading upon the ground that the commercial value of the bill of lading for collateral uses would be impaired, the association has decided not to insist upon the use of the proposed clause, but to allow the existing shortage clause to stand unchanged until the close of the present lake season. The Lake Carriers' Association then hopes to present a definite and reasonable short-

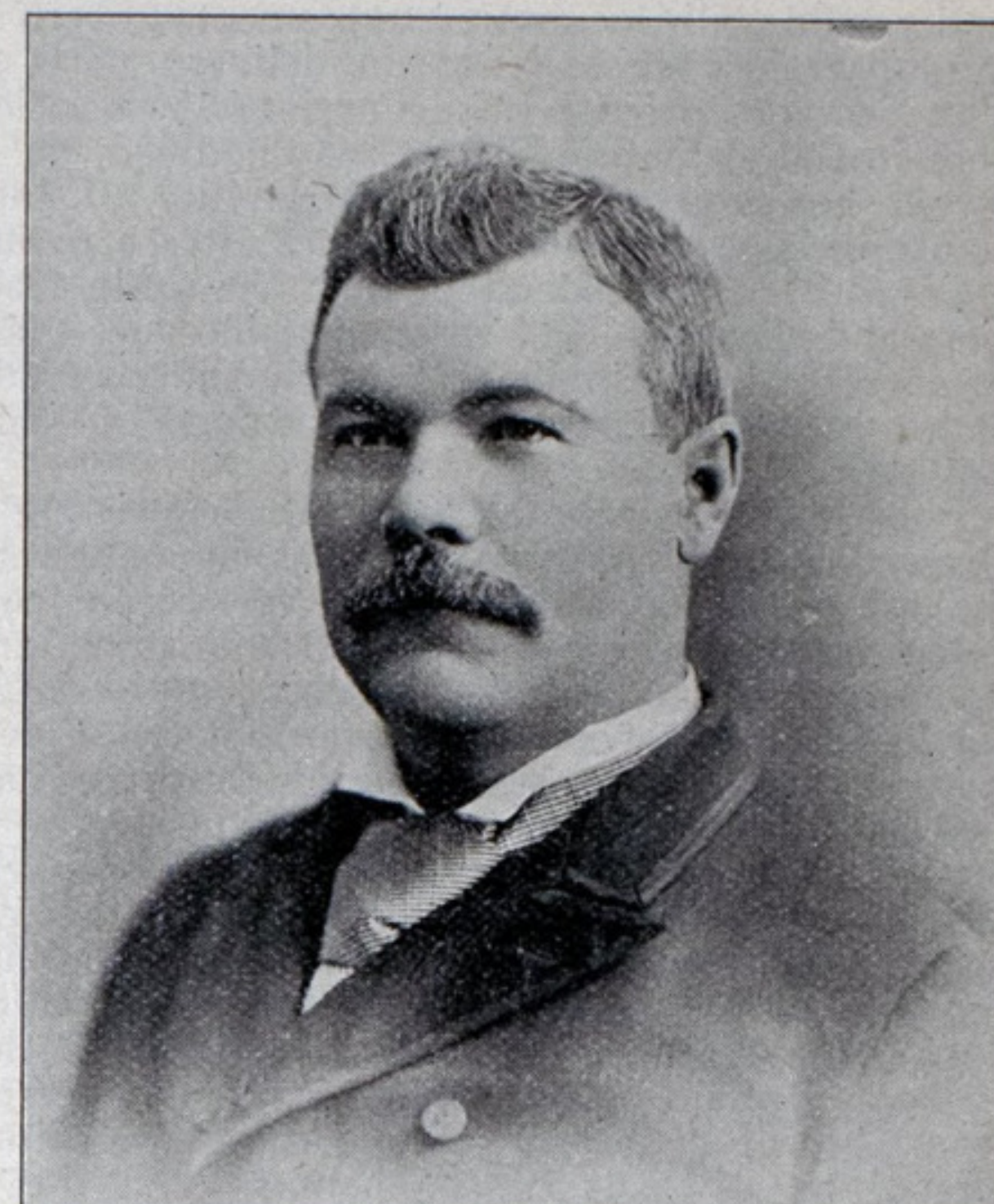
A ROLL OF HONOR.



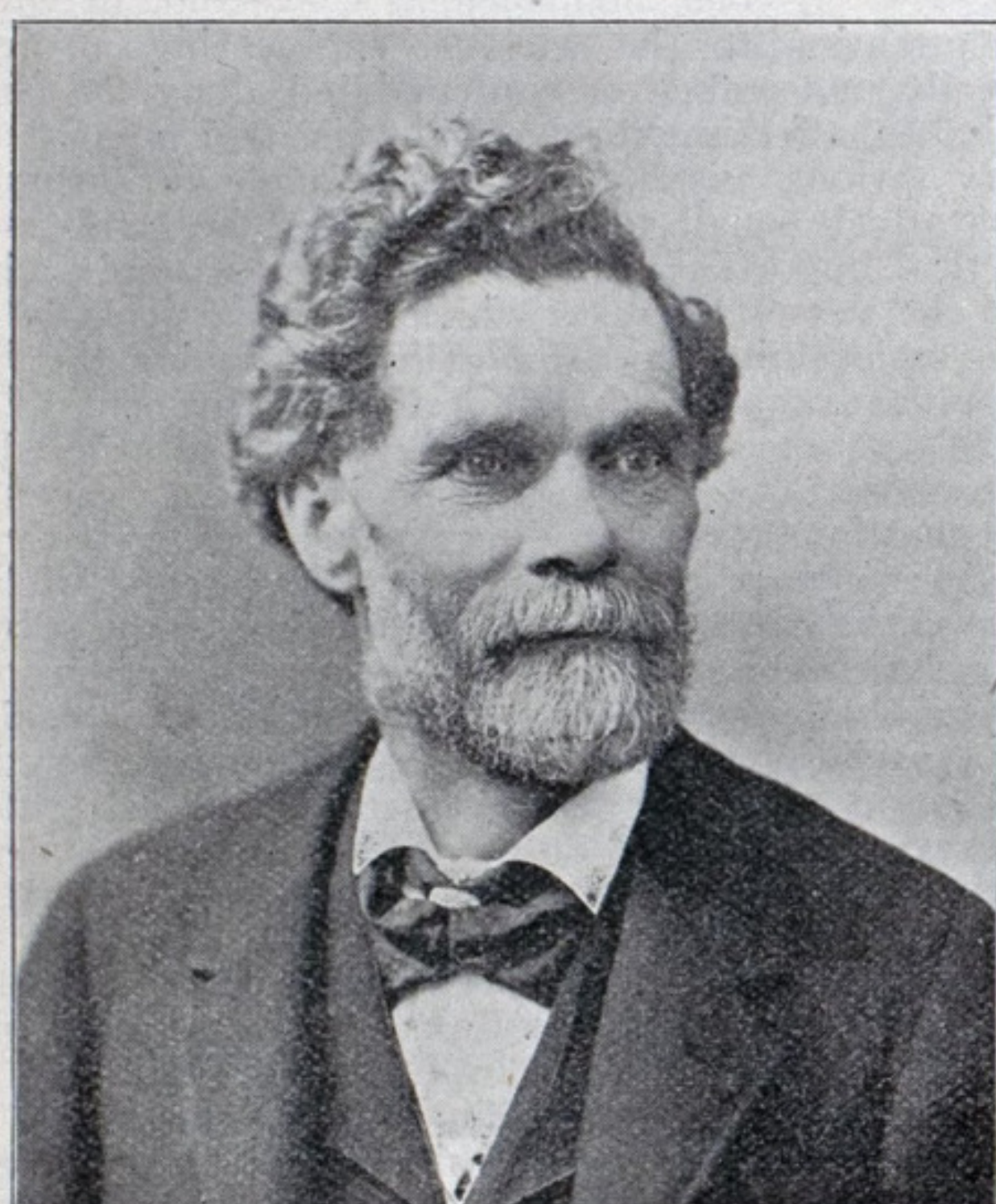
M. A. BRADLEY, CLEVELAND.
1892-3.



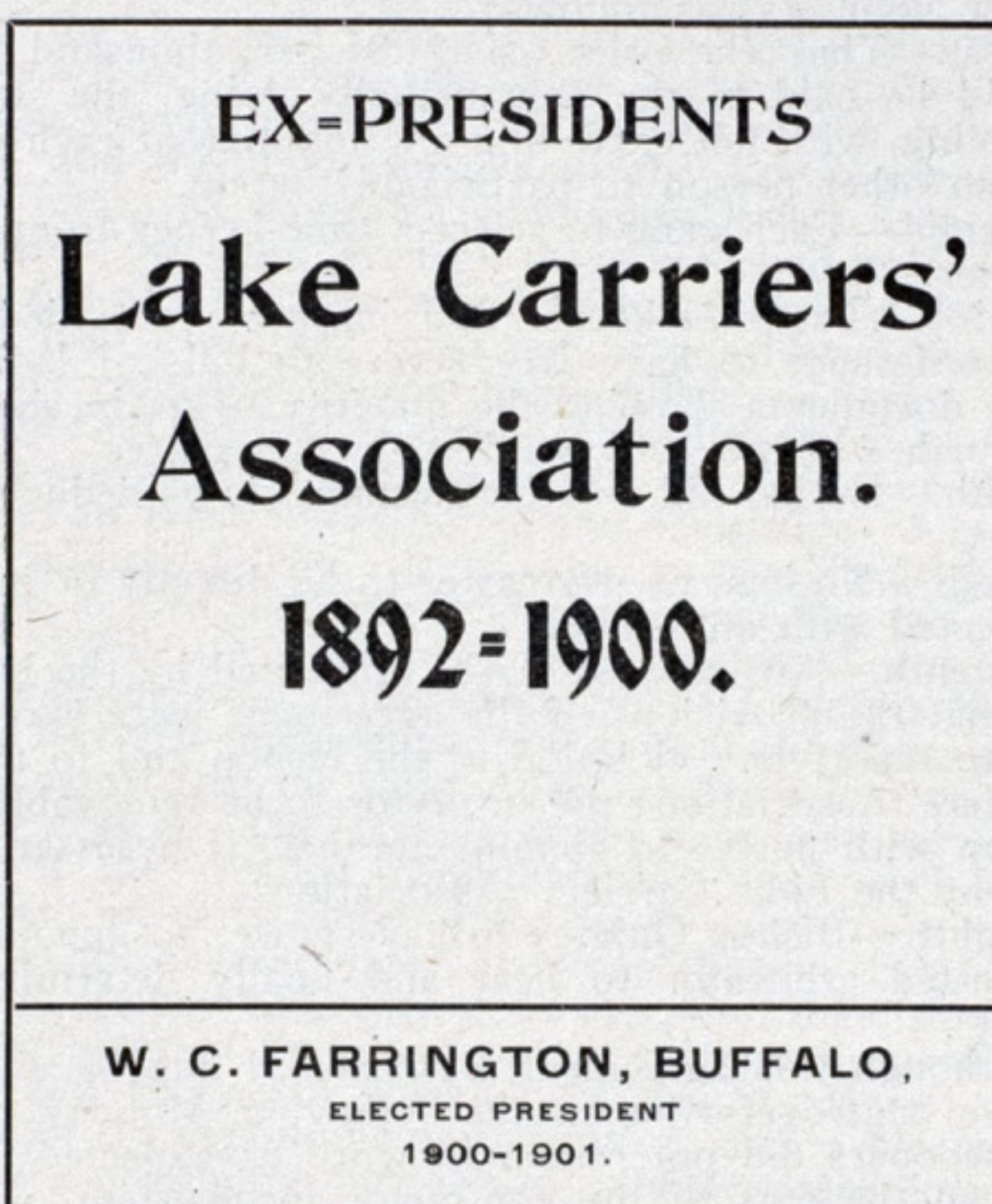
THOS. WILSON, CLEVELAND.
1893-4.



JAMES CORRIGAN, CLEVELAND.
1894-5.



WILLIAM LIVINGSTONE, DETROIT
1895-96.



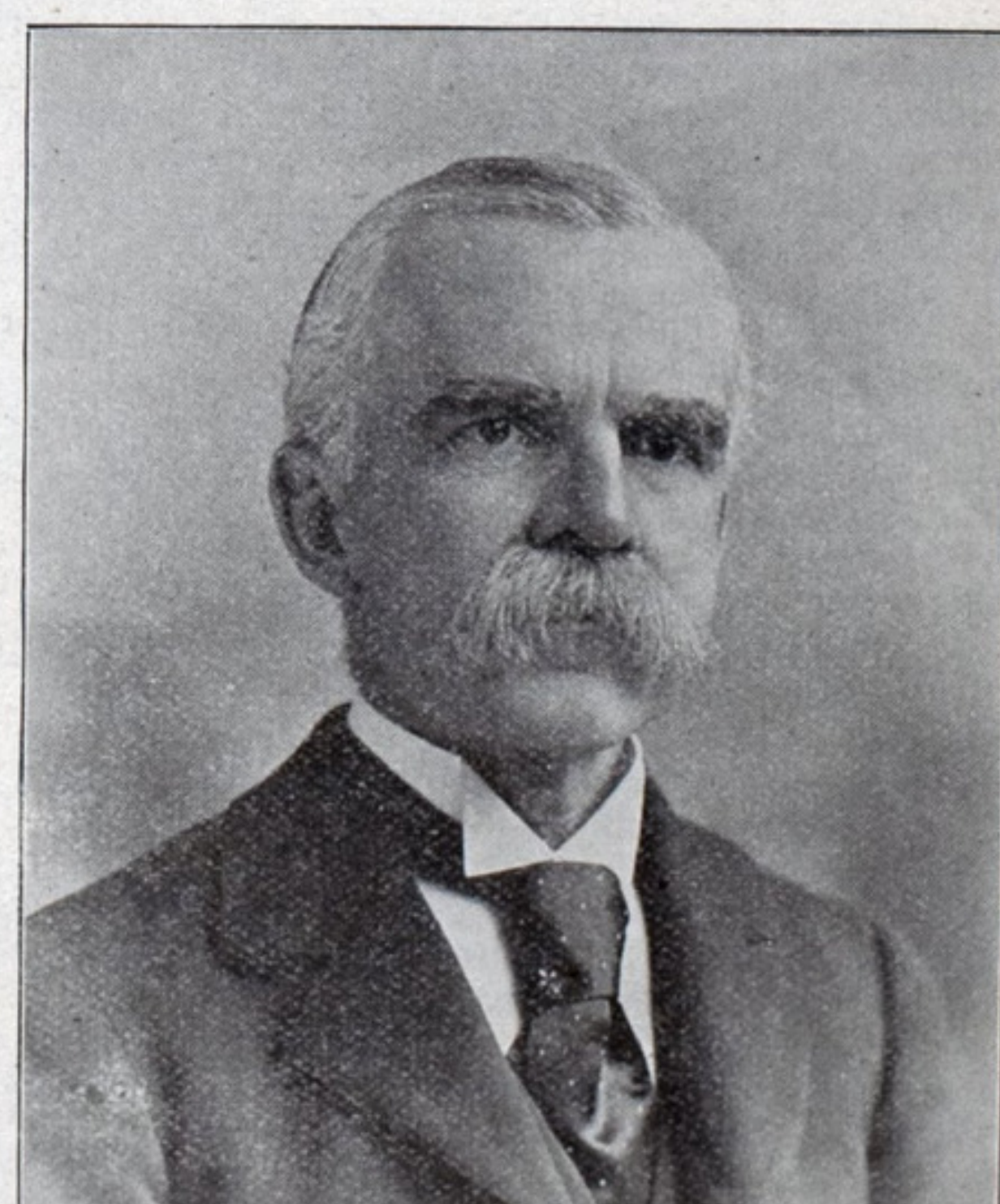
J. J. H. BROWN, BUFFALO.
1896-7.



JAMES W. MILLEN, DETROIT.
1897-8.



JAMES S. DUNHAM, CHICAGO.
1898-9.



FRANK J. FIRTH, PHILADELPHIA.
1899-1900.

age provision, that will not be subject to objection by the grain trade upon the ground of uncertainty in use.

Sixth.—No clause providing for the payment of demurrage will be inserted in the lake grain bill of lading this season.

The detention clause proposed at the Buffalo conference as a substitute for the demurrage clause, will be modified in consultation with the counsel of the Lake Carriers' Association, so as to express correctly the practice which it is understood will, by mutual agreement, govern the unloading of grain cargoes at grain delivery ports this season. The Secretary of the Lake Carriers' Association will then submit the detention clause, as modified, to each vessel owner for vote as to the advisability of inserting said clause in lake grain bills of lading after a named date.

Seventh.—It is understood that the grain trade, rail carriers and elevators, will co-operate in every reasonable way to correct abuses in the matter of shortage and detention and to secure dispatch to vessels at ports of loading and unloading.

Subsequently a local committee, consisting of Messrs. Brown, Maytham and Keep, was appointed to represent the association at Buffalo, and to receive complaints of vessel owners where dispatch in unloading grain cargoes was not given, and to take the matter up with the Committee of Control appointed by the Western Elevating Association. Upon this plan the grain business has been carried on during the past season, and during the greater part of the season very prompt dispatch has been given to vessels at Buffalo. Two causes, however, neither of them connected with any defect in the grain bill of lading, have prevented the new system from having an absolutely fair trial during the season. The first of these was the shoveling strike at Buffalo in the spring, which is referred to in this report hereafter, and the second the extraordinary business offered to railroads of the country and the shortage in rolling stock, in consequence of which the elevators at Buffalo became clogged early in the fall and some delays resulted owing to the inability of the roads to take away the grain as fast as it was received by lake. In the interval between the close of the strike, however, and the clogging of the Buffalo elevators from the cause above mentioned, the service at Buffalo was as good as could possibly be desired. The Buffalo committee of the Lake Carriers' Association found the Board of Control of the Western Elevating Association at all times ready to act promptly upon complaints, and where there was just cause for dissatisfaction, a prompt remedy was applied. The co-operation of vessel owners was also sought by instituting a system of notice from the agents loading vessels with grain at western ports by which the authorities of the Western Elevating Association were advised in advance of the boats coming to Buffalo with grain, and thus enabled to place them amongst the different elevators in a manner to facilitate dispatch in unloading. No cases of exceptional shortage or demurrage were submitted to the Secretary with request for arbitration.

GRAIN SHOVELING AT BUFFALO AND LABOR DIFFICULTIES.

The contract for shoveling grain at Buffalo during the season of 1899 was awarded at the last annual meeting to W. J. Conners, of Buffalo. It became apparent before navigation opened that there was to be a labor controversy at Buffalo between the contractor and the shovelers. It is not necessary to recite here the history of the differences of opinion between the contractor and shovelers. It is enough to confine ourselves to the position taken by the Lake Carriers' Association and to recite the part which it took in the troubles at Buffalo during the early part of the season of navigation.

The greater portion of the grain fleet arrived in Buffalo on the 3d and 4th of May. The work of unloading the boats proceeded very slowly. At no time was the work of unloading entirely discontinued, but the force of men employed was much smaller than under ordinary circumstances. Whatever form the differences between the contractor and his men had taken in the first instance, soon after the opening of navigation the shovelers took the position that they would not work under the contract system, but that they would return to the system of shoveling grain under boss scoopers at the different elevators which had prevailed before the contract system was put into effect. Under these circumstances the Executive Committee of the Lake Carriers' Association, at their meeting in Cleveland on May 3d, adopted the following resolution:

"Whereas, The system of grain shoveling in vogue at Buffalo for three seasons past has operated to correct many abuses; has furnished good wages to the men actually doing the work; saved vessels from delays and extortions and been of marked advantage to the grain trade of Buffalo, and for the mutual advantage of the shoveler and the vessel this system should continue; and

"Whereas, A contest has been excited in Buffalo to do away with this system and compel a return to the old system with all the abuses,

"Resolved, That the members of the Lake Carriers' Association have confidence that their contractor, W. J. Conners, is ready and willing to give the men fair treatment and the same wages as last year, and that they stand by Mr. Conners in this contest, and insist on the performance of the work under his contract."

On the 5th of May a conference was held at the Iroquois Hotel in Buffalo between members of the Executive Committee of the Lake Carriers' Association and a delegation from Local No. 51, headed by President McMahon. This meeting was practically held under the auspices of the New York State Board of Mediation and Arbitration. Messrs. Goulder, Wilson, Coulby, Corrigan and Brown attended on

behalf of the Lake Carriers' Association. The various labor interests in Buffalo were represented by officers and a number of the elevator men were in attendance. The position of the Lake Carriers' Association was stated by Mr. Goulder to the effect that the association had entered into a contract with Mr. Conners; that he had given them a bond for the faithful performance of the contract, and that the association had determined to stand by its contractor and by the contract system.

On Saturday, May 6th, another conference was held at the Iroquois Hotel, at which representatives of the Lake Carriers' Association, the State Board of Mediation and Arbitration, representatives of the Elevator Association, and all the various labor organizations of Buffalo were present. At this conference a paper was drawn up and signed by the various interests, proposing a basis of settlement. This basis included the preservation of the contract with Mr. Conners, abolishing the saloon evil, the appointment of an inspector to see that the saloon evil was abolished in fact, supervision in this regard by the inspector. This proposition, though signed by prominent labor leaders in Buffalo as a basis of settlement, was rejected at a meeting of the shovelers, after which the Lake Carriers' Association, through Mr. Goulder, made a statement showing that they had made earnest efforts to settle the trouble in a manner satisfactory to the scoopers and contractor, and had submitted what they considered a fair proposition to the scoopers, which they had refused to hear. In this statement Mr. Goulder suggested for the first time the name of Bishop Quigley, of Buffalo, to act as arbitrator.

On the 7th of May Bishop Quigley agreed to endeavor to reconcile the contending parties, and on Monday, May 8th, a prolonged conference was held at the house of Bishop Quigley, at which were present, in addition to the bishop, representatives of the Lake Carriers' Association, State Board of Mediation, International Longshoremen's Union, Buffalo Local No. 51. Little progress towards an agreement was made at this conference.

During several days thereafter conferences were held at the house Bishop Quigley, and on Saturday, May 13th, a basis of agreement was arrived at and put in writing, and signed by Mr. Goulder for the Lake Carriers' Association, and the attorney for the shovelers. The basis of settlement agreed upon was as follows:

First.—That the price of \$1.85 per thousand bushels should be paid to the men actually doing the work of shoveling, with not exceeding one foreman at each elevator leg, no other person to participate therein.

Second.—Each gang to select a time-keeper from its own number.

Third.—The time-keeper and inspector provided for at the conference to have free access to bills of lading and other documents showing the quantity of grain elevated.

Fourth.—Wages to be paid at elevator offices.

Fifth.—No bar bill or other accounts to be deducted from wages.

Sixth.—No boss or paymaster to be directly or indirectly connected with any saloon.

Seventh.—An inspector to be appointed by the bishop to see that the provisions of the agreement were carried out, and to report any violation to the bishop and to the Lake Carriers' Association; the inspector to be removable by the bishop with power to appoint another, if necessary, to be paid by the Lake Carriers' Association.

Eighth.—Bishop Quigley to have power to appoint a disinterested arbitrator to hear and finally determine complaints.

Although this agreement was entered into by all parties to the controversy, upon the following Monday morning the scoopers did not return to work as expected, alleging acts on the part of the contractor inconsistent with the agreement. Representatives of the Lake Carriers' Association therefore gave out a statement that they had entered into an agreement which provided a remedy for every abuse and evil that had been complained of by the men; that they had done all they possibly could to put an end to the labor trouble at Buffalo, and not having been successful in inducing the men to go to work, they could only withdraw from further negotiations, leaving Bishop Quigley to deal with the matter as he saw fit. Meantime the steam shovels and a force of two to three hundred men were steadily at work in unloading grain at Buffalo, and giving, under peculiarly difficult circumstances, as good dispatch to vessels as was possible. Meantime, also, without participation by representatives of the Lake Carriers' Association, various questions between the contractor and men, such as the selection of bosses, the temporary suspension of objectionable bosses and the employment of men not members of Local 51, had been the subject of negotiations between the contractor and shovelers, and on the 23d of May the settlement of these questions was so far advanced that the men returned to work at all the elevators. Bishop Quigley appointed Timothy P. Donovan inspector to see that the various terms of agreement which had been arrived at by all parties, were faithfully carried out, and to report any complaints of violation of the agreement to Bishop Quigley or his representative.

We have gone into a somewhat detailed recital of the dock difficulties at Buffalo in order to show clearly that the attitude of the Lake Carriers' Association from the start was one of fairness and willingness to redress all grievances which the shovelers properly complained of, and that the representatives of the Lake Carriers' Association worked faithfully at all times for the preservation of the contract system of handling grain and against the return to the boss scooper system which had preceded it.

To meet the large extra expense to which the Lake Carriers' Association was subjected on account of the shovel-

ing troubles, it was decided by the Executive Committee of the association to request owners carrying grain cargoes to Buffalo and Erie to pay an extra three cents per thousand bushels on shoveling, this extra three cents to go, not to the contractor or to the shovelers, but to the treasury of the Lake Carriers' Association. It was thought that this was the most equitable method of dealing with the large expense in which the association had been involved, as it would distribute the expense amongst all the vessels engaged in carrying grain in exact proportion to the amount of grain carried.

THE SHIPPING BILL BEFORE CONGRESS.

The bill for the encouragement of building up an American merchant marine which is now pending before both houses of Congress, has been before the Legislative Committee of the association during the year. In January last a joint meeting of the Legislative Committee of the Lake Carriers' Association, which has its headquarters in Buffalo, and the Board of Trustees of the Buffalo Merchants' Exchange, was held, at which Mr. Firth, President of the association, made a careful statement of the provisions of the shipping bill and the reasons why its passage would be beneficial. A resolution was adopted by the Legislative Committee and sent to Washington favoring the passage of the bill. Representatives of the association appeared before the House and Senate committees at public hearings on the bill, and the President of the association took quite an active part in framing the modifications and changes which were made in the bill before its reintroduction at the present session of Congress.

WATER LEVELS OF THE GREAT LAKES AND PROPOSED INTERNATIONAL COMMISSION TO CONSIDER AND DEAL WITH THE PROBLEM OF THEIR MAINTENANCE.

One of the most interesting and important questions relating to the matter of the lake traffic which has come to the front during the past twelve months, is the question of a proper method of maintaining the water levels on various lakes. The question is not a new one, but various recent events have served to bring it into great prominence, and it is now for the first time receiving the public attention which its importance deserves. On the 15th of July last President Firth, of the association, addressed a letter to THE MARINE RECORD, published at Cleveland, in which he called attention to the various engineering projects either actually undertaken or contemplated along the chain of Great Lakes, affecting the water levels, and pointed out that a very serious mistake was being made in assuming that comparatively small reductions in the lake levels were of no practical importance. President Firth strongly advocated that the vessel interests which were particularly interested in maintaining and if possible increasing the lake levels, should advocate and obtain the appointment of an international commission of United States and Canadian engineers, whose duty it should be to investigate carefully the entire question, recommending to their respective governments a permanent policy to protect the interest of lake navigators, without needlessly restricting important private enterprises desiring to utilize for power or other purposes the waters of the Great Lakes. The attention of President Firth was especially called to this question during the early part of his term of service as President of the association by the power canal project at the Sault. Correspondence between the President of the Lake Carriers' Association and the officers of the Sault Power Canal Company removed to a large extent the apprehensions that the President had that the project of the Canal Company might materially affect the water levels in Lake Superior and the upper St. Mary's river. Assurances were given by the Power Company that they were as much interested in maintaining the present levels in Lake Superior as the vessels, and that their plans called for structures in the unnavigable part of the St. Mary's river, which would compensate fully for the draft of water from Lake Superior through the power canal. A few weeks later it was reported in the public press that a company had been formed with suitable backing to construct a canal from Lake St. Clair to Lake Erie, and this again raised the question of a possible lowering of the levels of Lake St. Clair and the Detroit river. At the present time the power projects of Niagara seem to have little to do with the maintenance of lake levels as the water is taken away from and returned to the river in unnavigable parts of the stream. The whole question of lake levels has, however, been again brought into prominence by the proposal of the Deep Waterways Commission to maintain the level of Lake Erie by the construction of a partial dam at or near the head of the Niagara river. The purpose of this dam being to secure the deepening of the various harbors on Lake Erie and also the deepening of the shallow channels near the mouth of the Detroit river. President Firth's letter to THE MARINE RECORD has called forth a large number of replies and has shown a general disposition on the part of students of this question to approve his recommendation that the subject is of such importance that it should be taken up by an international commission. Able engineers, thoroughly acquainted with the whole problem of navigation on the lakes, have approved Mr. Firth's suggestion. The President recommends that the various articles approving this plan should be collected and published in pamphlet form by the association from expert sources on this subject. The Lake Carriers' Association could, in our judgment, do no more useful work than to bring about a scientific consideration of this question and satisfactory solution. It is quite clear that the various departments of the government are fully alive to its importance.

At the request of the Lake Carriers' Association th

Weather Bureau has this year taken up the duty of carefully collecting the facts relating to the rain fall on the various lake basins, and it has published in tabular form the statistics of rain fall in connection with the various government records kept by the United States War Department, of the monthly changes in the water levels of the various lakes. The tabulation of rain fall and water levels will be published with the annual report of the Lake Carriers' Association, and should also be made part of the proposed pamphlet on the subject of lake levels. The annual report of the Chief of Engineers of the United States Army for 1899, clearly shows that that department is alive to the importance of that question. On page 635 of the report, the Chief of Engineers refers to the question as follows:

"Of still more pressing importance for the time being is an energetic prosecution of the recently inaugurated work of investigating lake levels, the immediate practical purpose of which is to devise the best means of regulating these levels, and of preserving or increasing the navigable depth of natural and improved channels in the lakes and their connecting waters. Operations under this project are now dependent upon small allotments from two pertinent appropriations, but, if any reasonable progress is to be realized, it is essential that means be provided for continuing them on a much more extensive scale; the work is so intimately connected with the lake surveys, past and present, as to induce the suggestion that its further prosecution be in connection with appropriations for these surveys. It will be absolutely impossible to make anything like satisfactory progress in these investigations unless an expenditure of at least \$100,000 be provided for during the year ending June 30, 1901.

"It is therefore recommended that the estimate for surveys for the year 1901 be made to include the amount specified in the foregoing paragraph, and that the appropriation be formulated as follows:

"For survey of northern and northwestern lakes, including all expense of correcting, extending, and issuing charts, and investigating lake levels, with a view to their regulation, to be available until expended, \$150,000."

The matter of this appropriation will doubtless come before the committee of Congress during the present session, and the time is therefore opportune for the Lake Carriers' Association to ask Congress to make the necessary provision for careful examination of this subject, and at the same time to pave the way for the appointment of the international commission, which can alone deal with the subject in a comprehensive manner.

REIMBURSEMENT FOR PRIVATE LIGHTING.

The President of the association, soon after his election, called upon the Secretary and Treasurer to furnish him with full information as to the disbursements of the association for private lighting for five years past, the information to show the amount of money that the association has paid out for the purpose, the lights which it has maintained, the necessity for the lights, and any reimbursement that the association has received from the government, from marine insurance interests or any one else. When this information had been collected the President suggested that in his opinion the association had paid out moneys for lights which it had been the duty of the government to provide, and that the association was fairly entitled to reimbursement. The information was therefore put in proper form for presentation to the authorities at Washington, and a bill has been introduced in the Senate by Senator McMillan, of Michigan, under which the association can be reimbursed for its expenditure since the season of 1894.

The lights which the association has been paying for are of two classes; either they are lights which the association has maintained temporarily to light newly constructed channels built by the United States government until the Light-House Board could provide a permanent system for lighting the channels, or they are lights situated in Canada and used to light artificial channels built by our government for our ships, which can only be properly lighted from the Canadian side. It has been assumed that our government was powerless in any manner to provide lights on Canadian soil. Thus the Ballard's Reef lights at Ballard's Reef, which were maintained in 1896 at an expense of \$1,800, belong to the first of the two classes mentioned, and they have since been replaced by government gas buoys. To this class also belong the lights maintained this year in the Sault river, where the government has plans for lighting the various channels lighted by our lights, but it has not yet got the government lights into operation. To the second class belong the lights we have maintained for the whole of the six year period since 1894 in the vicinity of the Limekiln Crossing, where the channels are close to the Canadian shore and can only be properly lighted by lights on that shore. The Senate bill introduced by Senator McMillan has been referred to the Light-House Board for report and has been in turn referred by the board to the various district officers of the lighthouse service on the lakes. Full information from the point of view of the Lake Carriers' Association has been furnished to the district officers and to the Light-House board itself. We are very glad to say that in this matter the position taken by the Lake Carriers' Association has the hearty support of Senator McMillan. In a letter dated January 6, 1900, addressed to the Secretary of the association, Senator McMillan says:

"In my opinion the Lake Carriers' Association should be reimbursed for all the money which they have necessarily expended, the necessity being settled by the subsequent action of the government in replacing lights which the Lake Carrier's Association has maintained. Also, it seems to me entirely proper that the Lake Carriers' Association

should be reimbursed for lights necessarily maintained in Canadian waters. In short, I agree entirely with your letter, and think the suggestion with regard to contract lights a valuable one. The principle which should govern, of course, is that of making the lake waterways as safe as human ingenuity can make them in order to accommodate the enormous commerce passing through them.

"I have referred your letter to the Light-House Board, and have notified the board of my entire concurrence in the views expressed by you."

The reference to the contract system made by Senator McMillan in his letter is to a suggestion coming originally from one of the district lighthouse officers that it does not follow by any means that because the Light-House Board was powerless to build lights in Canada, it was unable to light the channels built by our government for our ships near the Canadian shore; that while our government cannot acquire sites for lights in Canada and own its lights there, it was possible in case Congress made provision therefor, that the Light-House Board could contract either with the Lake Carriers' Association or individuals for maintaining the necessary lights on the Canadian shore to light channels constructed by the government. It certainly does not seem right that one department of the United States government should expend millions of dollars on a channel and leave it unlighted, and that another department should not be able to find a way to spend a few thousand dollars in satisfactorily lighting this channel. Now that the problem is before the Light-House Board we may fairly expect that they will take it up with a determination to reach a satisfactory solution in some way. If it is part of that solution that the Lake Carriers' Association is to be reimbursed for the money it has paid out for these lights during the past five or six years, your Board of Managers will have rendered the association very useful service.

BLOCKADES IN THE ST. MARY'S RIVER.

The two blockades in the St. Mary's river during the past season have called especial attention to the difficulties under which the great commerce of that river is now carried on. It is difficult even for our lake vessel owners to realize the rapidity of the growth of the traffic through the St. Mary's river. In 1889 the total vessel tonnage passing through the river was 7,221,935 tons; in 1899 it was 22,000,000 tons. It is but a few years since night navigation in the river was begun, and while the opening of the Hay Lake channel and the improvements at the Encampment have greatly improved navigable conditions, it has been recognized from the start, even by those who had no idea that the growth of commerce would be so rapid, that the channels as they now exist must not be considered final, and that other extensive improvements will be necessary. It is estimated that the first blockade at the Encampment during the past season, although lasting only five days, involved a dead loss to those interested in the navigation of not less than a million dollars. It is even more difficult to estimate the loss of the shorter blockade near the end of the season. While the number of vessels detained was not so great as in the case of the wreck of the Douglass Houghton, the fact that the blockade was so near the close of navigation, made even the short delay involve a loss of a trip to many vessels. The damage would have been very much greater if the weather conditions had been such as to necessitate an early close of the Sault canal, or even the closing at the average date. It is appalling to think of the damage in dollars and cents, not to speak of the disturbance to the industry of the country, that might be caused by a serious and prolonged blockade of the St. Mary's river. Yet, under the conditions as they exist, such a blockade is not only a possibility, but almost a likely occurrence, and the increase in the size and number of vessels is every year adding to the danger. The whole history of improvement in the St. Mary's river, including the building of the new lock at the Sault, teaches the lesson that work begun by the government at the first warning is not completed any too soon. But for the building of the Canadian lock, the old government lock at the Sault would have been unable to take care of the business until the new lock was opened. Unless the new channels in the Sault river are begun at once, the existing channels will be overtaxed before the new improvements can be completed. The river and harbor act of March 3, 1899, provided for a thorough investigation of the further improvement needed in the St. Mary's river. The Secretary of War was authorized to "cause to be made and reported as early as practicable a survey of the connecting waters between Lakes Superior and Huron, including Hay Lake channel, with a plan and estimate of such improvement as will secure a safe and convenient channel twenty-one feet deep, between said lakes, the expense of which shall be paid from the appropriation for improving Hay Lake channel." Under this provision it is understood that the engineers in charge of the St. Mary's river are prepared to make their recommendation to Congress for further improvements of the channels, and it is also understood that such improvement will take the form of deepening the channel through the West Neebish, thus doing away with the difficulties at the Encampment and providing two channels through the most difficult part of the river, one of which can be used for ascending and the other for descending vessels. It is highly important that the assent of Congress to this project should be obtained at the earliest possible moment, and it is therefore deeply disappointing to the Executive Committee of the association to ascertain that there is a strong probability that no river and harbor bill will be passed by Congress this session. One of the most important questions to come before the annual meeting will be the consideration of the best method to hasten

this improvement, which is by far the most important now under consideration for the lakes.

WATER ROUTES FROM THE LAKES TO THE SEABOARD.

The continued growth of the lake traffic and the growing importance of the export business of the United States, not only in grain but in other products, such as iron and steel produced in the lake regions, has drawn public attention during the past year repeatedly to the various projects now pending for an improved waterway from the Great Lakes to the sea. The preliminary report of the Deep Waterways Commission, with its project for a dam at or near the head of the Niagara river, has already been referred to. In addition to the making of that report, the past year has seen the completion of the St. Lawrence canals and the opening of a fourteen foot waterway from Lake Erie to the sea by way of the St. Lawrence river. This has been promptly followed by plans for the development of an extensive grain trade through the St. Lawrence river, and a syndicate, largely composed of men familiar with lake navigation, has been formed to build large terminals at Montreal, and possibly at Port Colborne, with a view to the development of this branch of the business. Meantime two commissions have been at work in the State of New York examining the problem with a view to the best interests of that state. One of these commissions was appointed by the Governor to investigate the causes of the diversion of trade from the port of New York. The second commission was appointed by Governor Roosevelt to report to him as to whether the Erie canal should be abandoned or improved, and if improved, what should be the nature of the improvement. The plans for diverting the grain business to Montreal naturally aroused public interest in the State and City of New York in the work of both of these commissions. It is clearly apparent that the state is now more interested in the development of a connecting link between the lakes and the sea than at any time in its history. The report of the Canal Advisory Commission is now in the hands of Governor Roosevelt, and will be made public within a few days. The Governor has announced his intention of sending a special message on the subject to the legislature of the state. The commercial organizations throughout the state are taking an active interest in the matter and urging upon the state authorities a comprehensive plan of canal improvement, such as will preserve to the State of New York the commercial supremacy which the Erie canal gave to the state in its early days. It is understood that the Advisory Canal Commission will report against the abandonment of the Erie canal and in favor of improvement. It is also understood that the improvement which they will recommend is far more radical in its nature than any that has been under contemplation by the state in recent years. Briefly, the improvement recommended is believed to provide for a canal with ten feet draft of water, with locks twenty-five feet wide, and capable of taking in boats one hundred and fifty feet in length, with all the single locks lengthened so as to permit two boats of one hundred and fifty feet length to be locked through at once, and with such enlargement in the prism of the canal as will reasonably accommodate boats of this size. A canal boat twenty-five feet wide and one hundred and fifty feet long, drawing ten feet of water, would carry in the neighborhood of a thousand tons, and a tow of such vessels, consisting of steamer and consorts, would carry four thousand tons. Such canal boats are cheap to build and cheap to operate, and this fact, together with the advantage of the New York terminals will, it is believed by the commission, enable the state of New York to hold the commerce of the lakes against any competition by railroad or Canadian water route that may arise.

MISCELLANEOUS MATTERS.

During the past year the bill passed by Congress permitting vessel owners to file bonds in advance with the marshals of the United States Courts which will secure the immediate release of vessels libeled in admiralty, has gone into effect, and rules and regulations to carry out the law have been adopted in the various lake districts. A number of the principal fleets in the association have filed the necessary bonds in the offices of the different districts in which their business is carried on, and are now relieved from fear of detention under the old system by which libels for small and unjust claims were served just as vessels were leaving port. This result is one which the association has had in mind to bring about for several years past, and its final accomplishment is a matter for congratulation among the members.

A committee of the Lake Carriers' Association appeared at Washington before the International Commission last spring, made oral argument and filed a written brief in favor of including the abolition of Welland canal tolls, among the subjects to be taken up and settled at the international conference. As we all know the conference was unable to reach an agreement on the subject of the Alaskan boundary, and adjourned without making report on any of the subjects which it was called for to consider. Since then a temporary agreement on the Alaskan boundary has been arrived at through diplomatic channels, and it is expected that the international conference will again be called together to consider the other questions which were before it. In that event the canal toll question will unquestionably receive consideration.

The Committee on Aids to Navigation finds the most pressing need in the way of aids to navigation on the Great Lakes at the present time to be an additional supply of gas buoys for the St. Mary's river, especially for lighting the cuts at the Encampment and at the head of Little Mud

(CONTINUED ON PAGE 24.)



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CLEVELAND, O., JANUARY 18, 1900.

LLOYD'S register for 1898-9 gives the total tonnage of the United Kingdom and Colonies, including sail and steam as 13,665,312 tons.

THE house committee on foreign affairs have agreed to report the resolutions of representative William Alden Smith, of Michigan, inquiring of Secretary of State as to the status of the agreement between the United States and Great Britain said to prohibit the building, arming or maintaining of more than a single war vessel on the Great Lakes, such information to include all data bearing upon the subject now in possession of the department.

TWENTY years ago, or in 1878 the tonnage of Canada was 1,333,015 tons or nearly twice as much as it is today. The tonnage of vessels built in Canada in the year 1875 was 188,098 tons, in 1878 it had fallen to 106,976; and last year only 278 vessels with a tonnage of 24,522 were built in Canada. In the year 1876 the value of Canadian built ships sold to other countries was \$2,189,270, last year the value was \$191,069. The reason for this decline is the substitution of steel steam-ships for wooden sailing vessels and the United States went through the exact same crisis.

GREAT BRITAIN does not pursue any particular policy for the purpose of promoting its merchant marine. It would appear that their somewhat meddling Board of Trade throw every possible obstacle in the way of shipowners, tripping them up, making misdemeanors of trifles and then ringing in the pains, penalties and forfeitures galore. Subventions are paid by the government, however, for the use of certain vessels as armored cruisers in case of war in the amount of £50,000 or \$243,327 per annum, and payments are made for the carriage of mail aggregating £784,055 or \$3,815,603 as estimated for the current year towards which the Colonies and India contribute \$850,500 exclusive of South Africa.

THERE are some excellent speakers among the active members of the Lake Carriers' Association; men whom it is a pleasure to listen to when debating upon the many important questions brought before them in annual session assembled. To Mr. H. Coulby, in charge of the marine department of Messrs. Pickands, Mather & Co., Cleveland, (The Minnesota Steamship Co.) may be awarded the palm for clear enunciation, splendid delivery, elocutionary, if not oratorical powers and a terse, pointed, comprehensible method of defining a debatable situation or condition. Such speakers carry the full weight of their arguments and do much to clear away any entanglements that may arise in the course of a general discussion relative to parliamentary rules, laws, precedents, etc. Mr. Coulby was quite in evidence at the annual meeting of the Lake Carriers' Association held in Detroit this week.

THERE is no getting outside the fact that Congress in appropriating Federal funds for the improvement of Chicago river, went entirely outside the bonds of river and harbor legislation, and donated to the municipality a vast sum of money which it had not the slightest right to do. The Secretary of War has control over all navigable waterways and actively exercises this function through the Corps of Engineers, U. S. A., in the conservancy and improvement of rivers and harbors to the inner limits of the harbors, furthermore, a state or municipality is not permitted to obstruct navigable waterways inside of the harbor limits, and there the authority of the Secretary of War, acting through the Chief of Engineers, seems to end. When Congress is asked to appropriate funds to clean out the sewage of a river within the corporate limits of a municipality, and the request is granted in one instance, then it is a logical sequence that similar requests will be made by other cities, and, as there can be no invidious discrimination by the Government, as between port and port, it is reasonable to assume that National funds should be expended in cleaning up, dredging, straightening, widening, repairing docks, etc., for the several creeks winding through thickly populated districts and yet strictly within the purlieus of a, or the, municipality. From the foregoing, it may be surmised to what extent the abuse of the public funds might be carried. The false step, that is, the granting of this privilege to Chicago, (no matter under what conditions or circumstances) has roused the interests of other prominent lake ports in this matter, and now Congressmen representing the Buffalo district are asked to urge the same consideration for Buffalo creek that was awarded to Chicago. The city of Cleveland, at present carrying on extensive river improvements, also thought that Congress should extend its favors to the great Ohio port and vote, through the representations of the river and harbor committee, a good, sound, liberal sum for improving the shoal and winding Cuyahoga. Either wiser counsel prevailed, or the people had not the gall to petition Congress to sluice out, clean and dredge their sewers, or they desired to hold on to their municipal power, authority and prerogatives, in any case, the city has bonded for hundreds of thousands of dollars and the people shouldered the cost of the work within the city limits, just as they very properly should have done. There is a harbor line at all lake ports, inside of which the Federal Government is not permitted to expend one dollar of the nation's money, at the same time, and as we have said, the Secretary of War has been given the authority to veto a proposition to place any obstruction to commerce and navigation within the corporate or state limits of a navigable waterway. Should these flagrant violations relative to river appropriations be continued we can very clearly see the beginning of the end, when each location, district or port will be called upon to pay the major portion of the cost of all improvements carried on in its vicinity, including piers, breakwaters, light-houses, etc., and in the outer as well as the inner harbors. Of course this outlay need not be incurred without petitioning for and invoking the aid of Congress to assist in maintaining the prestige and commerce of the port by a grant or appropriation, if say, one-third of the actual cost, this amount to be awarded on the understanding that the plans, specifications and actual work be carried out under the authority, superintendence and supervision of the Federal government. This system, which we have but hinted at in the foregoing, may not be in full force within the next decade, but unjust and ill advised appropriations for river and harbor improvements, with other vile abuses, such as the rings and combinations entered into by government contractors, dredging firms, pier builders and others who make the government pay double prices for their work, will hasten the climax.

It is with much pleasure that the RECORD acknowledges receipt of a copy of the "Meteorological Chart of the Great Lakes" just issued by the Weather Bureau, Department of Agriculture, under the direction of Willis L. Moore, chief U. S. Weather Bureau. This compilation besides giving a summary for the past season contains a detailed account of the storms of the year, atmospheric precipitation in the lake region, fogs, ice conditions during the winter of 1898-99, possibilities of evaporation, wrecks and casualties due to weather conditions, etc., prepared by Alfred J. Henry, chief of division, Washington, D. C., and Norman B. Conger local forecast official and departmental marine agent, stationed at Detroit. The RECORD has faithfully, earnestly and persistently called for more attention to be paid to the hydrography, meteorology and physical geography of the Great Lakes, yet for years the several government depart-

ments quietly ignored our advocacy of these subjects. Finding that there was some inertia to be overcome our appeals and almost demands became more persistent, until at length the Weather Bureau took the matter up only to be followed at a later date by branches of the Hydrographic Office, U. S. N., the latter branch seems however to have confined itself chiefly to issuing "Notices to Mariners" which in many instances are published previously by the Light-House Board, though certainly in the earlier part of their work the Hydrographic Office issued some excellent charts, notably the "Pilot Chart of the Lakes," etc., it appears however as if lake interests will have to depend upon and tie up to the work being carried on by the Weather Bureau. Already a vast amount of data has been secured, the preliminary stages of the study of these natural economies have been passed and pertinent investigation is bringing about practical results along the lines mentioned in the foregoing. The present scientific, energetic and competent chief of the Weather Bureau, with his staff of skillful subordinates appears to be proceeding along the path which is destined to reveal the hitherto unknown quantities ruling the lakes and adjacent territory, and, judging from the publication now before us, the day is near at hand when the characteristics, weather conditions, etc., etc., of each lake for each month in the year will soon be a matter of official and unquestionable record, even as the daily prognostications are now being so generally accepted for their positive correctness and reliability. The RECORD is pleased to proclaim more power to the chief of the Weather Bureau and may his well advised projects for the benefit of the service meet with the heartiest co-operation from all sources and never be thwarted in their execution.

It is highly gratifying to THE MARINE RECORD to learn that Mr. Frank J. Firth, president, and the Board of Managers of the Lake Carriers' Association, so fully endorse the action of the RECORD in our recent journalistic campaign regarding the "Maintenance of Lake Levels." In the annual report of the above named officers it is recommended that the entire discussion, correspondence and communications, as published in THE MARINE RECORD, be reprinted in pamphlet form for distribution among members of congress and the prominent members of the lake marine fraternity. We have been requested to make a compilation of this excellent data with a view to its early reproduction and circulation as suggested and recommended. Another endorsement of our work during the past year and which emanated, or originated, from an editorial in the RECORD, of June 22, 1899, is the recommendation for the formation of a "Great Lakes Shipwreck and Humane Branch" as a feature of the Lake Carriers' Association. President Frank J. Firth points out how such an adjunct can be inaugurated, conducted and annually attended with the least possible loss of time or attention by the members concerned. As the entire proceedings of the annual meeting, as well as the report of the Board of Managers, will be printed in pamphlet form and mailed to all the members within the next few days, we hope that the recommendation on the question of a further circulation of the lake level subject, as also the formation of a committee to award merited recognition for humane acts, will meet with the consideration that the subjects demand.

THE thanks of the RECORD are due The American Steamship Co. for an invitation to attend the launch of the large steel cargo steamer John W. Gates, from the Lorain yards of the American Ship Building Co., on Saturday afternoon.

NAVAL DRY DOCKS.

A strong effort will be made by the Navy Department to obtain favorable legislation from Congress in the matter of building dry docks, of the largest size, at Havana, the Philippines and at some point in Puerto Rico. At present it is necessary for our ships of war, stationed in the waters in the vicinity of the Philippines, to go to the port of Hong Kong, in order to be dry docked for any repairs. This entails a large expense to this government and also some little risk to the vessels themselves. The Department has decided that if Congress authorizes the construction of a dry dock in the Philippines, Subig Bay would be the best place for it to be placed, as it is a natural harbor and is only about sixty miles from Manila. If the United States continues to govern the island of Cuba and is obliged to maintain a fleet in the waters of that island it will be necessary that a dry dock be built at Havana. In any event the Secretary of the Navy will strongly recommend to Congress that a dock of the largest size be immediately constructed at some favorable place in Puerto Rico.

PROCEEDINGS OF THE ANNUAL MEETING OF THE LAKE CARRIERS' ASSOCIATION.

The Ninth Annual Meeting of the Lake Carriers' Association was opened in Detroit on Wednesday, by 1st Vice-President Capt. Thos. Wilson, in the absence of the president, Mr. Frank J. Firth, Philadelphia.

Secretary C. H. Keep, Esq., read a letter from Mr. F. J. Firth, expressing his regrets at being unable to be present, and offering his best wishes for the welfare of the Association. Mr. Keep then read the annual report of the Board of Managers, which is contained at length in another portion of this issue of the MARINE RECORD.

After the reading of the annual report of the Board of Managers, a motion was made, seconded, and duly carried, that the annual report be received as read, and the subjects dwelt on therein take their usual course. The treasurer's report was then read, including shipping office expenses, private lights, aids to navigation, traveling expenses, etc., motion made that the report be accepted as read, having been duly audited, seconded and passed. Invitations received from the Mayor of Milwaukee to hold the next annual meeting at that port. The motion prevailed that a vote of thanks be sent to the Mayor of Milwaukee for his kind invitation, and that he be notified that Detroit has been fixed upon as the annual place of meeting for the Association. Motion by Mr. Coulby that the by-laws of the Association be amended so as to permit of a consecutive re-election of the president. Capt. Corrigan was not in favor of the motion, Mr. Coulby pointed out that a presiding officer was often interested in legislation up to the end of his term, and the best interests of the Association would be served by continuing him in office, moved and seconded that the change in the by-laws be taken under consideration at this meeting, remarks were made on the subject by Mr. John and James Corrigan, Mr. Coulby, M. M. Drake, Mr. Shaw, and others. The amendment was read again "that the president should not be eligible for re-election," when a tie vote was cast and the vote of the acting president carried the amendment. A two-thirds vote is necessary, however, to carry a motion. Motion made at 1 p. m. for a recess to be taken until 3 p. m. prevailed and the meeting adjourned.

On the re-assembling of the members at 3 p. m. the meeting being called to order, Capt. Keith, of Chicago, nominated Mr. W. C. Farrington, Buffalo, as president for the ensuing term, M. M. Drake seconded the motion, which was unanimously carried. Capt. James Corrigan nominated Capt. Keith as 1st vice-president, which being duly seconded, Capt. Keith was unanimously elected as 1st vice-president, and in the absence of Mr. Farrington, the 1st vice-president, was escorted to the chair, and afterward presided over the meeting, a rousing vote of thanks was given to the retiring 1st vice-president, Capt. Thos. Wilson. On the question of tonnage dues Capt. Wolvin made a motion that the rate should be 2½ cents up to and including vessels of 1400 tons, all over that register tonnage 3½ cents, after considerable discussion and remarks by M. M. Drake and others, the motion was carried unanimously.

Mr. Coulby made a motion for a committee to be appointed to take up the "Soo" river and Lime-Kiln Crossing sailing rules, with Capt. Davis, of the revenue cutter service, in order to make more clear or amend existing rules, the motion was seconded by John Corrigan and carried. On the question of grain handling the motion was made by Mr. John Corrigan to appoint a committee on this matter, with power to act, after a considerable and well-threshed out discussion, it was determined on an amended motion that the committee should be appointed and report progress to the Association in executive session on Thursday, at 2 p. m.

COMMITTEE APPOINTED DURING THE WEDNESDAY SESSION.

Grain Committee, Messrs. Waldo, Smith, Drake, Brown, Wolvin, Colton, Corrigan, Sullivan, Fitzgerald, Cranage and Shaw.

Committee to confer with Capt. Davis, U. S. Revenue Cutter Service, about river regulation and patrol, Messrs. Millen, Richardson, McGean, Benham, Leisk and Green.

Committee to confer with Col. Lydecker, Corps of Engineers, U. S. A. on "Soo" river improvements Messrs. McKay, Wilson, Coulby, Vance, McVittie, and Westcott.

Nominating Committee for vice-presidents, Messrs. Bradley, Brown, Maytham, McBrier, Brainard, Livingstone, Cranage, Helm, Gerlach, Mitchell and Calbick.

A committee was also to be appointed to confer with the Light-House Board relative to continuing lights as long as possible during the season of navigation.

The president not having arrived from Buffalo the session

was called to order at 3 p. m., with 1st Vice-President Keith in the chair. A few minutes later Capt. Wilson and Millen escorted President W. C. Farrington to the chair, who made a brief address, and the business of the third session commenced by reading regrets on the death of the late Mr. Eddy, R. P. Fitzgerald, R. H. Hebard, and James S. McKenzie.

Mr. Norman B. Conger, forecast official U. S. Weather Bureau, and marine agent, Detroit, gave a short address relative to the lake work of the Weather Bureau, and explained the investigations of that department in so far as they have been carried on, a vote of thanks was tendered to Mr. Conger for his valuable and interesting address.

The Grain Carrying Committee reported in executive session and required further time with power to act, signed by L. C. Waldo, chairman, Edward Smith, secretary, which was carried unanimously.

The several other committees reported as follows:

Vice-Presidents—H. Coulby, Cleveland; L. C. Waldo, Detroit; C. A. Braun, Buffalo; A. B. Wolvin, Duluth; C. A. Eddy, Bay City; L. M. Bowers, Cleveland; W. A. Rogers, Tonawanda; L. S. Sullivan, Toledo; M. J. Cummings, Oswego; James McBrier, Erie; F. W. Fletcher, Alpena; W. E. Fitzgerald, Milwaukee; Edward Hines, Chicago.

Board of Managers—E. Gaskin, Peter P. Miller, E. T. Evans, G. L. Douglas, J. J. H. Brown, John Kelderhouse, W. H. Gratwick, Jr., M. M. Drake, G. W. Maytham, Edward Smith, C. H. Donaldson, A. C. Braun, E. C. Maytham, Thomas Wilson, M. A. Bradley, James Corrigan, H. M. Hanna, George P. McKay, H. G. Dalton, Harvey H. Brown, John W. Moore, John Corrigan, William Gerlach, Henry A. Hawgood, W. C. Richardson, J. C. Gilchrist, W. D. Rees, John Mitchell, R. R. Rhodes, Caleb E. Gowan, L. M. Bowers, W. H. Becker, W. A. Hawgood, W. H. Mack, C. E. Benham, H. Coulby, J. H. Sheadle, W. G. Mather, T. F. Newman, Edwin S. Mills, John A. McGean, and W. W. Brown, of Cleveland; James W. Millen, Wm. Livingstone, Jr., David Carter, D. C. Whitney, W. A. Livingstone, A. A. Parker, L. C. Waldo, J. W. Westcott and Thomas Adams, of Detroit; D. T. Helm, Jesse Spaulding, J. S. Dunham, Joseph Austrian, C. W. Elphicke, Wiley M. Egan, J. J. Rardon and James H. Calbick, of Chicago; W. S. Brainard, A. W. Colton and L. S. Sullivan, of Toledo; Charles A. Eddy, O. W. Blodgett, B. Boutell, Thomas Cranage, Howard L. Shaw, and J. W. McGraw, of West Bay City; Alexander McDougall, F. N. LaSalle, G. H. Tomlinson, J. E. Rose and A. B. Wolvin, of Duluth; David Vance, H. J. Pauly, W. H. Wolf, W. H. Meyer and W. E. Fitzgerald, of Milwaukee; James McBrier, of Erie; F. W. Gilchrist, of Alpena; C. T. Morley, of Marine City; R. E. Schuck, of Sandusky; G. E. Tener, of Fairport; L. H. Van Allen, Geo. G. Harris, Albert Gibbs.

Executive Committee—James Corrigan, H. A. Hawgood, Thomas Wilson, M. A. Bradley, L. M. Bowers, W. C. Richardson, J. C. Gilchrist, R. R. Rhodes, H. Colby, J. H. Sheadle, John Mitchell, Edwin S. Mills, J. W. Moore and Wm. Gerlach, of Cleveland; J. W. Westcott, L. C. Waldo, and James Millen, of Detroit; M. M. Drake and J. J. H. Brown, of Buffalo; W. H. Meyer and David Vance, of Milwaukee; J. S. Dunham, J. A. Calbick and C. W. Elphicke, of Chicago; A. B. Wolvin and L. H. Van Allen, of Duluth.

Committee on Aids to Navigation—George P. McKay, W. H. Becker, J. A. McGean, W. A. Hawgood, Edward Morton and C. E. Benham, of Cleveland; J. G. Keith and W. M. Egan, of Chicago; W. A. Livingstone, of Detroit; A. W. Colton, of Toledo; Howard L. Shaw, of West Bay City; M. M. Drake, of Buffalo; W. W. Smith, of Sault Ste. Marie; C. T. Morley, of Marine City; and W. E. Fitzgerald, of Milwaukee.

Committee on Legislation—G. L. Douglas, E. T. Evans, P. P. Miller, M. M. Drake, C. A. Braun and J. J. H. Brown, of Buffalo; L. C. Hanna and James Corrigan, of Cleveland; Wm. Livingstone, of Detroit; C. A. Eddy, of West Bay City; Alexander McDougall, of Duluth; Dennis Sullivan, of Chicago; L. H. Van Allen, C. H. Donaldson, J. J. McWilliams, F. L. Vance, T. Helm.

The committee appointed to call upon Col. Lydecker, United States Engineer, to ascertain the condition of improvements of the waterways connecting the lakes, reported that Col. Lydecker was thoroughly in accord with the suggested improvements made by the committee, which recommended that a committee be appointed to take charge of the matter, and that the government be petitioned to as quickly as possible and wherever practicable provide two separate channels, Col. Lydecker said that if the work of cutting a channel through the West Neebish was started at once it would take at least six years to complete it and the committee recommended that the government be asked at once to

do the necessary work towards deepening and lighting the old channel from Sailors' Encampment through Lake George to Topsail Island. Col. Lydecker is in favor of an additional channel through the St. Clair flats in preference to widening the present channel, and he also favors widening the channel between Ballard's Reef and the Limekiln Crossing to 800 feet.

The committee appointed to confer with Capt. A. B. Davis of the revenue cutter service in regard to rules for navigating the "Soo" river, recommended several changes and the report of the committee was adopted. The report says that whenever vessels are compelled by reason of an obstruction in any of the channels of the St. Mary's river to collect in certain parts of the river, the revenue officer in charge shall direct where such vessels shall be moored and anchored, and no vessel moored or anchored by reason of such obstruction shall move until directed by the revenue cutter officer in charge.

The committee elected Capt. C. E. Benham secretary Capt. A. B. Davis submitted several proposed changes to the present rules governing the navigation of the Sault Ste. Marie river.

After careful consideration, the proposed changes by the members of the committee in connection with the following named masters: Capt. William Gerlach, C. H. Bassett, B. Nelson and W. W. Smith, were approved.

Change second paragraph of Rule One so as to read as follows:

Vessels of five hundred gross tons, or less, are exempt from the provisions of this rule."

Change Rule Three so that the same shall read as follows:

All vessels bound up the St. Mary's river may pass other vessels moving in the same direction between the crib light in the northern part of Mud Lake, and Evers' Point in Little Mud Lake, between the northern part of the Dark Hole and the south red buoy at Stribbling Point, also between the crib light-house at the northern entrance of Little Rapids or Island Cut and the government pier at Sault Ste. Marie, and between Big Point and the light-house at Pointe Aux Pins. Vessels bound down the river shall not pass other vessels moving in the same direction below Spry Dock, at Sault Ste. Marie, until Evers' Point is passed, excepting, however, in Hay Lake.

Vessels bound down of less than five hundred gross tons, without tows, may pass other vessels moving in the same direction in Little Mud Lake, provided the overtaking vessel shall pass to the westward of the black buoys and before reaching the Dark Hole. Whenever at Johnston's Point, Sailor's Encampment, a red ball is displayed under a white ball, or two red lights are displayed under a white light, indicating that a steamer with a tow is bound down, no steamer with a tow bound up, below Johnston's Point, shall meet or pass the bound down tow, until the bound down tow has passed clear of Johnston's Point.

No steamer stemming the current through the Dyke and Island Cut shall be allowed to tow more than one vessel without the aid of a tug, unless such steamer has the power to move the tow over the ground at the rate of at least three miles an hour.

Add the following rule to be known as Rule Seventeen:

Whenever vessels are compelled, by reason of an obstruction in any of the channels of the St. Mary's river to collect in certain parts of the river, the revenue cutter officer in charge shall direct where such vessels shall be moored and anchored, and no vessel moored or anchored, by reason of such obstruction, shall move, until directed by the revenue cutter officer in charge.

After which, Capt. Davis called the attention of the committee to the patrol service on the St. Mary's river, with an explanation of the difficulties with which the officers of said service had to contend. After some discussion upon the subject, the committee arrived at the conclusion that it is necessary that there should be constructed and placed upon the St. Mary's river for a patrol boat, one better adapted for use in such service than the Morrill.

We, therefore, submit for the consideration of your honorable body the following resolution, and respectfully recommend its adoption:

Be it resolved, by the Lake Carriers' Association, now assembled, that the Congress of the United States be and is hereby requested by said Lake Carriers' Association to enact in substantially the form hereto annexed the act providing for the construction of a revenue cutter of the third class, for service on the St. Mary's river.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled.

First: That the Secretary of the Treasury be and he is

(CONTINUED ON PAGE 30.)

IMPORTANT ANNUAL ADDRESS OF THE PRESIDENT AND BOARD OF MANA- GERS OF THE LAKE CARRIERS' ASSOCIATION.

(CONTINUED FROM PAGE 21.)

lake, where the association is now maintaining private lights in Canada. The principal difficulty in securing additional gas buoys has been the lack of lighthouse tender facilities on the lakes, and the committee has therefore taken up that matter with Senators Hanna and McMillan in the hope that provision may be made at this session of Congress for an additional tender or supply vessel, and that in connection therewith a vessel may be temporarily chartered by the lighthouse authorities so that the additional gas buoys may be provided and properly cared for before the completion of the new tender. The matter is receiving careful consideration, and the Committee on Aids to Navigation expects, with the assistance of the Senators above named, to be successful in its efforts.

Early in the fall the Executive Committee of the association held a meeting in Cleveland and adopted a resolution requesting the Light-House Board to leave the aids to navigation in service as long as possible. The exceptional weather conditions that prevailed at the close of the season and the high freights combined to keep boats in commission longer than usual. Most of the necessary lights, however, were kept in operation until the fleet was generally in winter quarters. There were some exceptions to this, however, and some lights were removed when a large number of vessels were still coming down the lakes and when the weather conditions did not appear to necessitate haste in their removal. The question of putting lights out of commission in the fall of the year has long been a troublesome one to deal with, both from the government point of view and the point of view of the vessel owners. All that can be reported in this regard is a gradual improvement, and the general disposition on the part of the officers in charge to do the best in their power to meet the requirements of the vessels.

In an editorial of THE MARINE RECORD of June 22d, 1899, the formation of a Great Lakes Shipwreck and Humane Society was urged for the purpose of recognizing and encouraging acts of personal heroism in efforts to save life or property on the lakes. The President of the association has taken a lively interest in this question, and he suggests that the following action be taken by the association:

That local committees at the different lake ports be organized inside the association whose duty it will be to take notice of and investigate cases of personal heroism occurring in their districts, such sub-committees to report such cases to the Secretary of the association, and he in turn to submit them to the Committee on Legislation for decision as to whether or not application shall be made by the association to the United States Life Saving Service Department for the issue of gold or silver medals or bars, such as are granted by the United States government for acts of personal heroism in saving life.

The President also suggests that the Committee on Legislation should prepare a form of engraved certificate, to be signed and sealed by the officers of the association and given together with the United States medal, presentation to be made in some suitable public way, preferably under the auspices of the sub-committee of the association originating the investigation and reporting the case.

It is believed that such public recognition of cases of exceptional merit will encourage to save life and property subject to the hazards of navigation, with benefit to the entire service on the Great Lakes.

In conclusion the Board of Managers congratulates the members of the association upon the prosperous condition of the association's affairs, and the generally satisfactory conditions prevailing in the lake carrying business.

It is particularly gratifying to note that the prosperity that has attended the lake trade during the past season, and which promises to continue during the coming season, has been widely distributed, so that the smaller as well as the larger vessels have alike enjoyed it.

Respectfully submitted,

BOARD OF MANAGERS,

By Frank J. Firth, President.
Charles H. Keep, Secretary.

MARINE PATENTS.

Patents on marine inventions issued January 9, 1900. Reported specially for the MARINE RECORD, complete copies of patents furnished at the rate of ten cents each.

- 604,762. Dredging machine, J. H. Gray, San Francisco, Cal.
- 640,836. Ship's rudder, T. V. Trew, London, England.
- 640,901. Wind and wave motor, R. E. Hardaway, Austin, Tex.
- 640,946. Air-ejecting apparatus for vessels, Gustave Quanonne, Houdon-Goegnies, Belgium.
- 640,982. Water motor, H. A. Wise, Luxora, Ark.
- 640,985. Life preserver, Henry Aylmer, Richmond, Canada.
- 640,016. Sail fastening device, A. G. Rupfel, New York, N. Y.
- 641,154. Steering apparatus, J. P. Serve, Caluire et Cuire, France.
- 641,180. Swimming apparatus, J. S. Bartholomew, Guerneville, Cal.
- 641,192. Steering mechanism, Jorgen Christensen, San Francisco, Cal.

MARITIME PROGRESS OF GERMANY.

(Special Consular report.)

In the whole record of German progress and development during the past thirty years, no chapter is more striking than that which describes the growth and improvement of its commercial marine, which now ranks second among European nations to that of Great Britain. The two largest, wealthiest, and most powerful steamship companies in the world are German and are located at Hamburg and Bremen, and the whole merchant marine of Germany included, on January 1, 1898 (the date of the last published official statistics), 2,522 sailing vessels of 585,571 tons net measurement, manned by 14,162 sailors, and 1,171 seagoing steamers of 969,800 tons and crews numbering 28,266 men, a total of 3,693 seagoing vessels of 1,555,371 net tons and manned by 42,428 men.

The process of development has been, here as elsewhere, an increase in the size of vessels, the elimination of sailing ships and their substitution by steam craft, and a steady decrease in the number of men employed in proportion to the tonnage under steam and sail. Thus, on January 1, 1871, the German merchant fleet included 4,372 sailing vessels with a tonnage of 900,301 and manned by 34,739 men. During the intervening twenty-nine years the sailing vessels fell away to the extent of 1,820 ships, 314,730 tons, and 20,577 men.

Of the 2,522 sailing vessels now under the German flag, 1,986 are of wood; but they are mainly small, so that the remaining 566 modern steel and iron sailers comprise more than two-thirds of the entire tonnage of the sailing fleet.

The whole seagoing steam merchant marine of Germany is of iron and steel and comprises a relatively large number of the largest, fastest, and most powerful steamships in the world. The growth of this branch of the merchant service has been almost phenomenal and vindicates the active and liberal governmental policy by which it has been fostered. In 1871, Germany had in her ocean service only 147 steamers, with a tonnage of 81,994 and 4,736 men, the average capacity of the ships being only 558 tons. The statistics for 1898 show an increase of 1,024 steamers, 887,906 tons, and 23,530 men. The average tonnage per vessel increased from 558 to 828 and the average crew decreased from 32 men to 24.

A forcible illustration of the growth and importance of the German merchant marine is furnished by the statistics of the single port of Hamburg. During the year 1898, there were in operation from that port 112 regular lines of steamers, of which 61 flew the German flag. These lines operated 792 steamers, of which 495 were of German register. They made a total of 6,247 voyages and carried 4,500,000 tons of freight, as compared with 4,683 voyages and 3,500,000 tons carried in 1890. Germany has today 27 regular lines of steamships to European ports and 34 to the rest of the world—the Americas, Africa, Australasia, Asia, and every island of the sea that offers a present or promises a future trade with the Fatherland. Of the entire tonnage carried by these lines last year, 1,793,742 tons were for European ports and 2,663,407 tons were for countries outside of Europe.

The two greatest German steamship companies, viz., the North German Lloyd and the Hamburg-American company, have their home ports respectively at Bremen and Hamburg.

The North German Lloyd company was founded with 3,000,000 florins capital in 1857, just ten years after the Washington had made the first steamship voyage from New York to the mouth of the Weser. The Lloyd has risen in forty-two years to a foremost position among all organizations of its class, with an active capital of more than 100,000,000 marks (\$23,800,000) and 73 steamships in actual service which aggregate 237,550 h. p. and 266,138 gross tons register. At the head of this fleet stands the Kaiser Wilhelm der Grosse, with engines of 28,000 horse-power, 14,349 tons register, and the blue ribbon for speed in successive trans-Atlantic voyages.

On the 25th of April last the company had under construction 10 steamships, of which 1, the Grosser Kurfurst, is of 12,500 tons, 4 others of 10,000 tons each, 3 of 7,500, and 2 of 5,000 tons each, the whole aggregating 51,000 h. p.

A notable feature in the management of this company has been its readiness to spend large sums of money in keeping its fleet up to the highest standard of efficiency, sacrificing vessels while still capable of fairly good service, and replacing them with others of a larger, faster, costlier, and more modern type. Of its whole active fleet, only two

steamships remain which were in service in 1886. Since that time, the company has sold 26 steamers and built or bought 51. It carried in 1898, 161,963 passengers, of whom 114,268 were between Europe and North America. At the close of last year, the North German Lloyd had carried on transoceanic voyages 3,709,980 passengers, and during that one year transported 1,983,482 cubic meters of freight. Its principal lines are from Bremen direct to and from New York, Baltimore, Galveston, South America, eastern Asia (China and Japan), and Australia, besides a regular line between Genoa and New York.

The company has sold during the past year three steamers—the Fulda, Havel, and Werra—which would have been considered first-class vessels five or six years ago, and rejected the Kaiser Friedrich, a new vessel of 12,431 tons and 25,000 h. p., because she did not fulfill the contract specifications as to speed.

The Hamburg-American Steamship Company was founded in 1847, with 465,000 marks (\$106,950) capital, and began business with two large sailing ships, which in that year carried 168 passengers between Hamburg and New York. For more than fifty years, the company has grown and developed along the same lines as its great rival in Bremen, until at the beginning of 1897 it had in service 64 ocean steamers with 241,507 tons register and 164,255 indicated h. p. These included steamships like the Furst Bismarck, Normannia, Augusta Victoria, and Columbia, of more than 8,000 tons and up to 16,400 h. p., two of which were sold to Spain because they no longer fulfilled the requirements of the company's trans-Atlantic service. At the same date (January, 1897), it had in construction 4 ships—the Pretoria, Brasilia, Belgia, and Patricia—3 of 10,000 tons each and 1 of 13,500 tons, which have since been completed and put into service. Of all the vessels which carried the flag of the Hamburg-American Company in 1886, but 3 were on its active list in 1896, and it had meanwhile lost 1 steamer, sold 32, and built or purchased 72. Its capital has grown to 78,000,000 marks (\$18,564,000), and, together with the North German Lloyd, it controls more than one-half of the entire steam merchant fleet of Germany.

During the period from 1830 to 1850, the wooden sailing vessels which constituted Germany's merchant fleet were built mainly at shipyards on the Elbe, the Weser, and along the coast of the North Sea, all of which were at that time in a highly flourishing condition. In those days, master shipbuilders had usually taken a course of study at the shipbuilding school in Copenhagen and served a subsequent apprenticeship in some American shipyard, where they studied the art of building those famous clipper ships which held the record for speed and weatherly qualities. Hamburg and Bremen had meanwhile started private schools to teach young workmen the rudiments of ship construction, and about 1836, the Prussian government founded near Stettin a technical high school in which there was a preparatory course in higher mathematics and a full course of study in theory and ship construction. All this, however, related to wooden vessels, and the effect of such instruction was seen in the fine, large, clipper-built sailers that went out between 1850 and 1860 from Bremen and Hamburg, carrying the steadily growing throng of emigrants who swarmed to those ports for passage to the United States—for it was the emigrant trade that laid the keels, so to speak, of the two great German steamship companies of today.

Then came the period when Great Britain—which had first built ocean steamships—substituted iron for wood in shipbuilding and took the lead in the new era of construction.

Germany was handicapped in the start by want of resources and experience in iron working and still more by a general lack of confidence—even on part of German shipowners—that the ship yards of this country could turn out iron vessels comparable in quality and price with those produced by British constructors. The managers of the Lloyd and Hamburg companies shared this distrust, and down to as late a date as 1880, their steamers were practically all built on the Clyde and the Mersey.

Meanwhile, ten years earlier, and just before the memorable epoch of 1870, the Prussian government had established at Kiel and Wilhelmshaven yards for the construction and repair of war vessels, which work had been hitherto done almost exclusively at Danzig. The events of 1870 made it imperative for the newly consolidated German Empire to build and equip a navy in its own shipyards and at the earliest possible moment. The government yards

were inadequate to the task, so a contract was given to the private Vulcan shipyard at Stettin for the construction of the armored frigate *Preussen*, which was so quickly and satisfactorily executed that a second vessel, the armored corvette *Hansa*, was ordered. The building of the *Preussen* marks the date of the revival. The confidence of the admiralty was secured; it was shown that armored war vessels could be designed and constructed in Germany, and today the Vulcan shipyard builds steel cruisers and battle ships not only for the Fatherland, but for Japan, China, and the republics of South America.

The great merchant shipowners were still skeptical, however, and it was not until fifteen years after the launch of the *Preussen* that the North German Lloyd and the Hamburg-American gained sufficient confidence in their home builders to withdraw their patronage from British constructors. That they did this at all was mainly due to the fact that they were forced into it by an act of legislation. About 1884, the imperial statute was enacted granting important subsidies to the North German Lloyd for a line of mail steamers to eastern Asia and Australia, with the stipulation that the steamships receiving such subsidy must be built in German shipyards by German workmen and, so far as was practicable, of German materials. A contract for six imperial mail steamships was let to the Vulcan company, and they were delivered during 1886 and 1887. Each ship met every requirement, and the six collectively demonstrated that steamship building had reached in Germany the best standard of British and French construction. The effect was a rush of orders for both war and merchant steamers, not only to the Vulcan works, but to the Germania yard at Kiel belonging to the Weser company, to Schichau and Danzig, and to others.

The latest productions of the Vulcan yard—ships like the *Kaiser Wilhelm der Grosse*, *Friedrich der Grosse*, and *Königin Luise* of the German Lloyd and the *Augusta Victoria*, *Furst Bismarck*, *Patricia* and *Palatia* of the Hamburg-American—place the Vulcan works at Stettin in the front rank of modern steamship builders. They were established in 1851 by a private firm; in 1857, this was converted into a stock company with 1,000,000 thalers (\$714,000) capital, which has been since increased to \$1,004,000, with plant and property valued at \$5,500,000. The entire plant covers 58 acres, and the actual floor area of its workshops is more than 60,000 square yards. The company now employs 6,500 workmen and has built in all 247 ships, of which 61 were war vessels, 127 mercantile steamers with single or double screws, and 40 paddle boats for river and estuary service where light draft of water was an essential requisite.

The merchant marine of Germany is under the general supervision of the marine bureau of the Department of the Interior, Berlin, and elaborate statistics of new constructions, losses through shipwreck, etc., are published every two years in an official report.

The materials for shipbuilding, although largely of German origin, include a considerable proportion of foreign materials imported under the law of July 15, 1879, which grants free entry to all materials, fixtures, and even guns, which are to be used in the construction, repair, and equipment of both war and mercantile vessels. Under this provision there were imported free during the year 1898, 4,408 tons of pig iron, 8,960 tons of structural iron, 5,048 tons of wrought cranks and shafting, 28,246 tons of steel and iron plating for hulls, 1,280 tons of anchors, 1,252 tons of heavy castings, 60,268 tons of sawed lumber, 72,234 tons of hewn lumber, besides quantities of cordage, hemp, and other materials.

The chief source of the iron and steel employed in ship construction is Westphalia, when it is transported to the northern shipyards either by water via the Rhine and North Sea or across country by rail, special low rates being granted on the Prussian Government railways for all materials intended for this purpose. One of the most potent arguments in favor of the Dortmund-Ems canal, which was opened from Dortmund to Emden recently, was that it would facilitate the shipment of iron and steel for shipbuilding purposes from the interior of Westphalia to the shipyards on the northern coast.

The great steel works of Friederich Krupp, at Essen, make not only guns and armor plate for war vessels, but all kinds of large forgings, stems, rudder frames, propeller shafts, and heavy framework and engine parts for both war and merchant steamers. But the principal shipyards at Hamburg, Kiel, Stettin, and Danzig are so fully equipped

as to be practically independent of outside assistance in these respects.

The turning point in the development of naval construction in Germany was during the years immediately following 1870, when the necessity of beginning immediately an armored fleet for the newly consolidated Empire compelled the admiralty to not only increase the equipment and capacity of its own shipyards, but to give contracts for iron-clad vessels to private German constructors. Similarly, the first real opportunity given to a home shipyard by either of the great navigation companies at Bremen and Hamburg, was when a Government subsidy compelled the Lloyds to place a contract for six imperial mail liners for the China and Australian service where they could be built by German workmen, and as far as practicable, with German materials. We have seen that since 1879, all materials needed and used for shipbuilding have been imported free of duty, and that the Government railways have hauled steel, iron, lumber, etc., from foundries to shipyards at the bare cost of handling and transportation.

All this was much, but it can safely be said that the great lines which now connect the two principal German ports with Asia, Australasia, and the German colonies in East Africa would not and could not have been established and maintained during the earlier years of struggle and uncertainty had they not received the direct, liberal, and assured support of the Government through fixed annual subsidies.

This policy was inaugurated under the vigorous leadership of Prince Bismarck, then Chancellor of the Empire, who, on April 6, 1881, submitted to the German Parliament a long and elaborate memorial, based upon a review of the French mercantile marine act of January 29 in that year, which appropriated \$4,500,000 per annum as subsidies to steamship lines from France to Corsica, Brazil and La Plata, New York and West Indies, India, China, Algiers, and Tunis. The memorial also showed in detail how Great Britain was paying annually at the same time in postal subsidies £641,656 (approximately \$3,118,448) for lines to South America, East Indies, China, Japan, West Indies, Africa, and the United States, while Italy expended for similar purposes, in 1879, \$1,593,214 and Austria, \$1,034,844.

Germany had, at that time, been living about eleven years under an imperial government, and was rapidly changing from an agricultural to an industrial and commercial nation. Bismarck had the sagacity to see that the time would soon come—had indeed come—when Germany must have new and extended foreign markets for her surplus manufactured products or languish from congestion, as her productive energies overran the purchasing power of her own people. His appeal to the Reichstag was based upon the experience and adopted policies of France and Great Britain, the rivals from whom Germany had then most to fear, and met with immediate and cordial response.

A convention was framed and entered into by the Imperial Government and the North German Lloyd Steamship Company, by which the latter bound itself to establish and work for fifteen years three main lines of steamships: One, from Bremerhaven to China, with a branch line from Hongkong via Yokohama and Hiogo to Korea; second, a line from Bremerhaven to Australia, by way of a Dutch or Belgian port, with a branch service from Sydney via the Tonga Islands to Apia and back to Sydney; and, third, a line from Trieste via Brindisi to Alexandria. The contract included thirty-four sections and prescribed in full detail the number of voyages to be made by each line, the average speed to be maintained, the number and tonnage of new lines to be built in German yards of German material and manned throughout by German subjects; fixed penalties for violation or neglect of any stipulation; prescribed reduced rates for transportation of German officers, soldiers, marines, and civil officials, etc. For this service, the Imperial Government bound itself to pay a yearly subsidy of 4,400,000 marks (\$1,047,500). The first steamer on the China line left Bremerhaven on June 30, 1886, with imposing ceremonies befitting such an occasion, stopped at Antwerp, where similar proceedings took place, and then sailed away for Hongkong, thereby opening what was felt to be an important new chapter in the commercial development of Germany. The success of the Asian and Australian lines in opening new fields for German export pointed the way to a second enterprise of the same character, and on May 9, 1890, a new convention was made with the North German Lloyd Company to put on a monthly line of steamships between Hamburg and Delagoa Bay, via Lisbon, Naples, Port Said, Aden, Zanzibar, and Dar es-Salaam, with coast lines between Zan-

zibar and Lamu, Bagamoyo, Saadani, Pangani, Tonga, Kilwa, Lindi, Ibo, and other African ports. For this service, the Government bound itself to pay an annual subsidy of 900,000 marks (\$214,200). These contracts have been amended and enlarged, always with the purpose of securing higher speed, more frequent voyages, and better service.

After fifteen years of successful operation, the original contract for the eastern Asia and Australian lines was renewed for a similar period, with various modifications, on the 30th of October, 1898. Among the more important changes were the following:

The terminus of the China line was made at Shanghai, instead of Hongkong, and it includes intermediate stoppages at a port in Belgium or Holland, at Genoa, Naples, Port Said, Suez, Aden, Colombo, and Singapore.

A separate principal line is established between Bremen or Hamburg and Japan, with terminus at Yokohama and stops at Hiogo, Nagasaki, Hongkong, and the other intermediate ports specified for the China line.

Branch lines are provided from Hongkong to Shanghai and another branch from Singapore to several specified ports in the Dutch East Indies and Sunda Archipelago to New Guinea.

The maximum standard speed is raised to 13½ knots per hour, and all new steamers built for this service shall be of not less than 6,000 tons register.

The new contract took effect on the 1st of April last, and for its fulfillment the company is to receive in monthly payments an annual subsidy of 5,590,000 marks (\$1,330,420).

The next step in contemplation is the establishment of a new monthly line by the Hamburg-American Company direct to the German Chinese port of Kyao-chau, and, for this purpose, a bill is in preparation to be submitted to the Reichstag at its coming session.

When it is considered what the East Asian, the Australian, East African, and Mediterranean lines of the North German Lloyd have done for the foreign commerce and the national influence and progress of Germany during the past fifteen years, at an expenditure of a little more than \$1,250,000 per annum, there is presented a striking lesson of what can be done by persistent, well-sustained effort, carefully planned and faithfully carried out. The convention of October 30, 1898, between the Imperial Government and the North German Lloyd comprises forty-four articles, and an official copy is transmitted with this report as an example of a German State paper in which every contingency is foreseen, and no detail, however minute, omitted which can contribute to the completeness of the service which is therein provided for and secured.

Not only has the German merchant marine been thus liberally and consistently supported by subsidies of money from the public treasury, but it has been encouraged, applauded, and honored by the entire influence of the Imperial Government, which in a country where royal favor is so potent and eagerly sought for, is an important element of success. The Emperor is not only an enthusiastic yachtsman and sailor, but he is under all circumstances an ardent and powerful advocate of expansion and improvement of the German fleet and merchant marine. No capitalists or business men are more honored in Germany than those who have contributed to these results. When in November last, Consul Meier, founder of the North German Lloyd Company, died in his ninetieth year, the honors bestowed upon his memory were of princely splendor and solemnity. When Captain Schmidt brought home the lame and battered *Bulgaria* from her long and perilous battle with wintry seas, the Emperor's thanks and medals met him at the gang plank, and he and his men became heroes in the recognition of their Government and countrymen.

It is quite an easy matter for government engineers to dismiss the subject of lake levels by stating that a large artificial outlet, if it made any difference at all, would only lower the surface about three-tenths of a foot. This three-tenths of a foot would be quite a drift on the length of a fellow's proboscis, and in all cases, would mean the factor between grounding, waterborne or floating, where vessels are concerned. Every foot of water in the narrow channels connecting the lakes is as valuable as gold and if it is found absolutely necessary to shear off the surface, the slices should be made mighty slim and not at the rate of three-tenths of a foot each clip. This will need attention when the Dominion of Canada opens the St. Clair-Lake Erie and the Georgian Bay-Lake Ontario canals. Had these routes been in United States territory water would have been flowing through artificial cuts long ago.



CHICAGO.

Special Correspondence to The Marine Record.

The steamer Nyanza was chartered for corn to Buffalo at 3¼ cents for winter storage and delivery.

Capt. Ed. Gillen, of Racine, has been awarded a contract to build a new dock at South Chicago, for which \$11,000 will be expended.

The steamer Gogebie and barge Biwabik were chartered by Capt. John Prindiville for corn to Port Huron at 2½ cents for winter storage and delivery in the spring.

Lieut. W. E. Reynolds of the United States revenue cutter service has been appointed inspector of life-saving stations on Lake Michigan to succeed Lieut. J. E. Reinburg.

Capt. John A. Reid, eighty years old, died here on Tuesday. He was engaged in piloting vessels on the upper lakes for fifty years and was the owner of several large lumber freighters.

Barry Bros. have purchased the passenger and freight steamer, State of Michigan, from Capt. George McCullagh, of Detroit, where the steamer is in winter quarters. Barry Bros. intend to run her between Chicago and Muskegon in the passenger and freight business next season.

The annual reception and ball of the Chicago Lodge of the Shipmasters' Association, held at the Medinah Hall last Thursday evening, was very largely attended and was a great success both socially and financially. The grand march was led by Capt. Henry Leisk of Milwaukee, Grand President of the Association, and Mrs. George Tebo, and a thoroughly enjoyable evening was spent.

The Goodrich line steamer Muskegon is being broken up and dismantled at Manitowoc to obtain such articles of value as the craft still contains. It is estimated by those who are supposed to know that the old ship has paid for herself at least a dozen times since she came out in '71. She has always been a money maker, and could be sent anywhere on the lakes or Green Bay. Her first cost is said to have been about \$65,000.

There is said to be less grain tonnage at Chicago this year than at Milwaukee, a rather unusual circumstance. The fleet wintering here has a capacity, it is estimated, of about five million bushels. Vessel men say there is fully as much in the Milwaukee harbor. About one-fifth of the local room, one million bushels, has been taken, and the vessel men have gotten 3¼c to load and hold corn, compared with 2¾ cents at this time last year.

It is reported here that Major Willard, Corps of Engineers, U. S. A. has succeeded Major Marshall as United States Engineer at this point. He will have control of the river which after the complete opening of the drainage canal, is expected to greatly benefit those having dock and wharfage interests along the river front. No officer ever stationed at Chicago entered so heartily into the improvement of this river and harbor as has Major Marshall, and the change, if it has actually taken place, will no doubt give the Major a more exalted position in the service of the Corps of Engineers, U. S. A.

The transfers of vessel property cover about 150 bottoms exclusive of tugs and other small craft during the past year. Never in the history of the lakes has there been so much buying and selling of boats and at tip top prices, and from ripe old wooden bottoms to high classed steel steamers. Capt. James Corrigan, principal of the firm of Corrigan, McKinnney & Co. purchased an additional fleet of seventeen boats to carry ore from the mines to his own and other furnaces, discharging points, etc. The Menominee fleet of five high classed steel cargo steamers averaging about 3,000 tons each was among the most notable transfers of ownership.

Water power sufficient to operate the city pumping stations and municipal lighting plants for 75 years will be turned over to the city of Chicago by the Sanitary board as a result of a joint conference today between the city council and the drainage board. By the terms of the agreement, which will in all probability be ratified by the drainage board and the city council, all the water power privileges generated at Lockport, by the opening of the new drainage canal will be transferred to the city at the rate of \$4 per horse power. The amount of power which it is estimated will be created at Lockport is about 25,000 horse power, which will furnish the drainage board with an annual income of \$100,000.

Cassier's Magazine for January, besides many good things interesting to the engineering fraternity, has a full page picture of the new torpedo boat Turbinia taken as she is steaming at 35 knots, also a portrait and a full biographical sketch of her inventor and designer, Hon. Charles A. Parsons, besides much other information about this wonderful vessel and her means of propulsion.

DETROIT.

Special Correspondence to The Marine Record.

Mr. Charles Linn, for about thirty years a shipbuilder at Gibraltar, is now laying on his oars at his home, 431 Cass Avenue. Mr. Linn constructed quite a fleet of wooden boats during his shipbuilding career, but he now admits a steel hull is the only fitting structure.

The report of Col. Lydecker, Corps of Engineers, U. S. A., concerning the loss to vessels during the past year by reason of delays caused by blockades in St. Mary's river, places the loss at \$665,000 and recommends the construction of a wider channel. He makes a similar recommendation concerning St. Clair Flats canal.

The steamer State of Michigan, which has run to Alpena on the Detroit-Macina route for many years, has been sold to Captain Miles E. Barry of Chicago. She will go on a new route between Milwaukee and Muskegon. The new owner will have \$10,000 worth of rebuilding done during the winter. The price paid is not made public, nor is it known what steamer, if any, will go on the Alpena run next season.

The following statement of vessel passages through the Detroit river during the season of 1899 is furnished through the courtesy of F. B. Dickerson, portmaster. Total number of passages from November 15th to December 27th, the date of the last passage up, 1,840; total number of passages during the season 22,741; this is 637 more than were reported during the season of 1898. Upwards of two-thirds of the total number of vessels passing Detroit were furnished through the marine postal service with storm warnings, weather forecasts, and reports of the velocity and direction of winds.

The Drydock Association of the lakes held its annual convention here on Tuesday and readopted the same card of rates and charges that prevailed last year, with the additional provision that 3 per cent. will be deducted if bills are paid within thirty days. The charges for dockage are 20 cents per ton up to 500 tons and 10 cents per ton above 500. Six cents per ton per day will be charged for the time the vessel occupies the dock. The following officers were elected: President, James C. Wallace, Cleveland; vice president, Edward Smith, Buffalo; secretary and treasurer, James E. Davidson, Bay City, Mich.

Justice Fitzsimmons will have a sort of admiralty case. Luke and Ed Hawley want \$100 from John Wagner, the sewer contractor, for recovering from the high seas (to wit, the Detroit river), a lighter, or scow, which became unloosed from its moorings, last November, and was leisurely floating down toward Lake Erie. If the Hawleys had not, with marvelous foresight, gone out and towed the scow to a pier, Mr. Wagner, it is claimed, would have suffered grievous loss, and therefore salvage to the amount of \$100 is claimed. Mr. Wagner was politely requested to shell out, but he refusing, suit has been brought to recover the value of the services rendered.

One of the topics which has been quietly discussed during the meeting of the Lake Carriers' here this week is the question of insurance rates. The tariff will not be established as to rates on hulls until the first of April, but already there are indications that the increased demand for insurance on account of the increase in vessel values, will be enough to supply the new facilities entering the field. It is practically certain that there will be no cutting or lessening of rates, especially when it is considered that the underwriters at London assert that during a very recent year they paid out on losses on the Great Lakes more than the total of insurance premiums placed on such risks.

There is not another as good place in the country for the building of small boats and launches as Detroit, nor a pleasanter location on the lakes in which to make use of them. The invention of the gasoline engine has done much and as its merits are understood, will do much more, to bring them into use. With a coal burning steam yacht the services of an engineer are required after a heavy first cost has been incurred. Now, for \$375, a person can buy a launch complete, large enough to seat ten men with a two and one-half horse power gasoline engine that any man or boy can run, and at an expense of three cents an hour. For the people in a city situated as Detroit is, there is no more healthful nor delightful recreation, nor any that, after the first investment is more economical, and the scenes on the river from season to season show a growing appreciation of this fact.

It seems useless to attempt to give the names of all those in attendance at the Lake Carriers' Association meeting this week. Outside of the local shipmasters, commercial men, tradesmen and others of that ilk, Cleveland was better represented than any other port and several of the members were accompanied by their wives, a feature which would become very customary if the convention was held in the summer. The presence of Mr. Firth, the retiring president, was generally wished for, Mr. Livingstone was absent the first day also, and he is a host in himself in making matters go along smoothly. Several of the old timers were conspicuous by their absence, although new men are gradually stepping in. Mr. McGean, who has been for many years in the employ of Upson, Walton & Co., shipchangers, and is now slated as the new manager for the Bessemer Steamship Co., (Rockefeller's line), was one of the new men to be placed on committee work, presumably on the strength of his future position. Mr. McGean is also vice-president of a Cleveland marine paper and is a rising young man, as his appointment by Mr. Rockefeller clearly testifies. It was a pleasure to see

ex-Mayor George Gardner here from Cleveland, also Mr. George Quayle, son of the pioneer shipbuilder. Mr. Bartlett, of Bartlett & Trinker, steamship agents, forwarders and wharfingers, was also in evidence; while insurance interests were well represented by Messrs. McCurdy and Prime and surveyors Capt. F. D. Herriman and Mr. Coffin. Mr. Alex. McVittie, manager of the Detroit Ship Building Co., was also captured for committee work this time, though he generally got clear at all past meetings; but I missed some of the good old stand-by members. Mr. Archie Tomson of the Wilson Transit line, and Capt. Forbes of Port Huron and a part owner in several boats were also present. During Wednesday there was fully 500 men thronging the floors of the Cadillac hotel at different times. The local shipmasters closed the day with their annual ball which was numerously attended by a select selection of selectness in which your correspondent got lost in the shuffle. Mr. Coulby, Capt. James and John Corrigan, Mr. Wolvin and M. M. Drake also J. J. H. Brown were among the best speakers at Wednesday's meeting. Of course John Shaw, Esq. was all there, but it is expected that an admiralty lawyer has lots of logic stowed away and ready to unload once the jaw-tackle is placed in motion.

PORT HURON.

Special Correspondence to the Marine Record.

Capt. John McArthur will leave on Thursday for Buffalo, where he will superintend the repair work on several boats.

Mr. O. L. Jenks, principal of the Jenks Ship Building Co., who has been very ill for the past two weeks is now on the improve.

People are crossing the river on the ice at Marine City every day. Several iceboats have been brought into commission and they skim from one side of the river to the other in quick time.

The local shipmasters are doing everything in their power to make their annual ball and reunion one of the most enjoyable of the 20th century, and all guests will meet with hearty and unbounded hospitality.

The tug Rannels, which was recently purchased by Capt. J. C. Miller, of Marine City, towed the barge Aurora from Port Huron to Marine City last week. The Aurora was partly rebuilt here and will winter at Marine City.

Mayor G. W. Parker, of Marine City, has been re-elected commodore of the L'Anse Creuse Ice Yatching Association, with headquarters at McSweeney's club house on Lake St. Clair. This association expects to have several yatching tournaments during the winter.

The local branch of the Shipmasters' Association have installed the following officers for the ensuing year: President, A. C. May; first vice president, H. Maitland; second vice president, J. A. Flick; secretary, M. A. Budd; treasurer, H. W. Davis; chaplain, P. F. Powerie; warden, Edward Johnson; sentinel, J. W. Jordon.

Considerable work is being done on the boats laid up at Marine City. The steamer Schoolcraft will receive a new stem and lightworks forward. The barge Bloom is being repaired in Bell river. The work of rebuilding the Sakie Shepherd is also progressing. The frames of the new boat for Corrigan, of Cleveland, are all up and the ceiling was started on Monday.

The Port Huron Salt Co. was organized in this city last week with the following officers: President, J. W. Cooper, of St. Paul, Minn; vice president, Peter Reiss, of Sheboygan, Wis; treasurer, Hartson G. Barnum, of Port Huron; secretary, E. M. Holbrook, of Chicago; general manager, Milton R. Wood, of Wyandotte. Directors, J. W. Cooper, Peter Reiss, H. G. Barnum, E. M. Holbrook and M. R. Wood. The capital stock of the new company will be \$350,000, and the purposed plant will be the second largest in the United States. The United, of Cleveland, O., is the largest.

The Jenks Ship Building Co., one of the few independent companies on the lakes, is building two big freighters in its yards at Port Huron. They are of steel, one for the Volunteer Transportation Co., of which Capt. J. W. Westcott, of Detroit, is one of the stockholders, the other for the Wilson Transit Co. The first boat will be ready for service for early navigation. She is 342 ft in length, 43 ft beam, has a moulded depth of 26 feet, and a capacity of 3,400 tons. The second, which will be completed in August, is 440 feet length of keel, 50 feet beam, 28 feet molded depth, and will have a capacity of 7,000 tons.

A vote for the canal on Tuesday will be a vote to remove the greatest drawback to Port Huron's attractions as a summer and health resort, and render it the most delightful place of residence in the lake region. Construction of the canal and cleansing of Black river will mean the bringing of thousands of people to Port Huron who now avoid it during the hot months, and the leaving here of tens of thousands of dollars every year. It will mean new factories on Black river. It will mean pure atmosphere all the year round and the purest stream flowing through the center of the city that any place the size of Port Huron in the world can boast. Its cost will not be over fifty cents a year on every thousand dollars of the assessed valuation of property in the city. And it will not detract from the depth of the water anywhere at the mouth of the river even if it does lessen the current somewhat.

The Bethlehem Steel Co. has shipped a big side armor plate to the Newport News Ship Building Co. for the battleship Illinois and 60 tons of casement armor to the Cramps for the Alabama.

CLEVELAND.

Special Correspondence to the Marine Record:

Although the price was not given out, it is said that J. C. Gilchrist paid \$100,000 for the steamer C. B. Lockwood. Other parties offered \$95,000.

Capt. Charles A. Galton, last season in the Mitchell line steel steamer Hendrick S. Holden, will next season take charge of the new steamer W. E. Rees owned in the same line.

R. L. Newman, who was in charge of the Globe Iron Works shipyard, at Cleveland, has entered upon his duties as general manager of the New York Ship Building Co., which is erecting at Camden, a very large shipbuilding plant.

The employees of the Great Lakes Towing Co. gave their first annual ball on Wednesday evening at Lang's Hall, 618 Lorain Street. Music was by the Great Western band. The participants enjoyed a very pleasant evening and the first annual was voted a complete success.

Plans for the addition to the marine hospital, corner of Erie and Lake streets, soon to be made in the shape of a new ward specially for patients suffering with contagious diseases, are now being prepared in Washington and they will be forwarded to Cleveland as soon as completed.

The American Steamship Company has issued invitations to attend the launch of the steamer John W. Gates, at the Lorain yards of the American Ship Building Co., at three o'clock Saturday, Jan. 20th. The invitations are signed by John W. Gates, president of the company, in whose honor the large steel steamer is to be named.

Lieut. George P. Blow, U. S. N., who was executive officer on the ill fated Maine when that vessel was blown up in Havana harbor, visited Cleveland this week. Lieut. Blow established, and for a few months had charge of, the branch hydrographic office in Chicago also in Cleveland, during which time he made a host of friends in this city.

Vesselmen say that coal shippers to Manitowoc and Sheboygan will not be able to get any season tonnage for 60 cents. They claim that 65 cents has been offered on the quiet and that the offer was turned down. Some of the owners do not appear to be anxious to tie up for the season on coal, but some Lake Michigan coal could be covered by season contracts at 70 cents to Manitowoc and Sheboygan, and 75 cents to Milwaukee.

Mid-winter launches are rather the exception than the custom and an Eastern yard recently experienced great difficulty in launching a vessel on account of the tallow hardening and freezing on the ways. Lake shipyards launch sideways and are always successful in getting the hulls waterborne at the appointed time, hence no uneasiness is felt regarding the operation of launching this 6,000 ton modern built steel cargo steamer.

Captain C. E. Benham, custodian of the government building, thinks Secretary of the Navy J. D. Long's reasons for not wanting to establish a naval training school at Cleveland are not well founded. The Secretary said a training ship could not be placed here because it would be contrary to the international agreement not to maintain more than one warship apiece on the Great Lakes. Capt. Benham says a training ship need not necessarily be a warship. The revenue cutters are armed and are not considered warships.

The local shipmasters are arranging for their annual ball that is to be given on the night of January 25 at the Chamber of Commerce Hall. The captains, when they do a thing of this sort, usually do it in the right way, and this year is to be no exception to the rule. The arrangements are that they are to have the best music that the city can afford for the night, and the dance will be followed by the best dinner that the captains know how to arrange for. The prospects are that the attendance will be very large this year as usual.

Capt. E. Day, superintendent of the Pittsburg & Conneaut Dock Co., has been promoted to manager of the Pittsburg Steam Ship Company's fleet of boats (Carnegie's) with headquarters at Cleveland. Capt. Day has been superintendent of the docks at Conneaut harbor since their opening several years ago, and no superintendent on the chain of lakes was more highly honored and respected by employees. The vacancy caused by Capt. Day's promotion has not as yet been filled, but will remain in charge of the docks at Conneaut until the opening of navigation.

The rate for unloading grain at Cleveland for 1900 will be \$2.50 per 1,000 bushels, the same as it has been for the past few seasons. Martin Connors, who has had the contract for a number of years, has already signed contracts with most local vessel owners to do the work during the coming season. The officials of the longshoremen's union some time ago decided to put in a bid for the work at the annual meeting of the Lake Carriers' Association. Martin Connors has always dealt direct with the vesselmen and he is satisfied that the contracts he has made with the local managers and brokers will stand and that he will continue to do the work at this port.

That excellent institution, the Floating Bethel, J. D. Jones, chaplain, held its annual meeting this week, and the work of the society was even better this year than ever before. There are institutions of all sorts, but none can do the efficient and effectual work of the Floating Bethel, and the chaplain's hands, or rather the only fin that he has left, the right one, or if it is the left, it is the right one, anyway, should be and is being nobly upheld. In this society, contributions fetch up where they are intended for, and there is no percentage or rake-off for grasping or impecunious col-

lectors clothed in the garb of sauve or sweet-scented religious mendicants. The hardest and most depraved outcasts that from time to time hang out on the river front, while not encouraged, can but speak good of the Floating Bethel and its earnest, energetic, bluff, God-fearing, one-armed chaplain, who is at all times on deck to assert his personality and mission on this earth.

"Nothing has been done about ore unloading charges for the coming season, and it will probably be several weeks before the matter is taken up. The longshoremen sent a delegation to the Lake Carriers' meeting at Detroit this week. Vice President Walsh said a few days ago that a conference of the leaders of the union would be held shortly after the meeting of the Lake Carriers and that a general meeting of the men would be held before a rate was decided upon or any demand was made. Mr. Walsh said he could not state what rate would be asked, but that an advance over last season's rate would surely be demanded. The rate for winter work on the docks was settled some time ago and the business is going along very smoothly. Ore is going forward from the Lake Erie docks to the furnaces pretty freely, but if cars were more plentiful the movement would be much heavier. All the dock managers are complaining about the shortage of cars.

BUFFALO.

Special Correspondence to The Marine Record.

At a meeting of the Marine Engineers' Beneficial Association, No. 1, of Buffalo, Saturday evening, the following officers were elected and installed for the ensuing year. President, Albert Edgar; vice-president, Edgar Hull; corresponding secretary, Robert Noone; recording secretary, Charles Fox; financial secretary and treasurer, Peter Burns; chaplain, Edward Carter; doorkeeper, Henry Morgan; conductor, James Murray; delegates to national convention, George Towne, William Garrity, Sam Moore.

There is a probability that the Union Dry Dock Company will not sign a contract with the Fire Commissioners to build a new fire boat for the city at the company's low bid of \$91,000 made in the recent competition for the work. The company and the Commissioners do not agree over certain clauses in the contract. It is said the Dry Dock Company officials claim the contract differs considerably from the specifications upon which they bid, and they fear that certain clauses, if lived up to, would hinder the construction of the boat in six months.

The completion of the enlarged Canada canals, which threatens to divert from the port of Buffalo a large portion of the grain-carrying trade, was discussed by representative citizens at a largely attended meeting of the Merchants' Exchange on Friday. Resolutions were adopted, urging upon the governor and legislature of the state the adoption without delay of a plan of improvement for the Erie canal, which will meet the exigencies of the situation. A committee will proceed to Albany at once to press upon the members of the legislature the urgent necessity for prompt action in the matter.

The Canada Steamship Co. is looking for boats with which to replace the vessels chartered last year from M. A. Hanna & Co., and since sold to the Republic Iron and Steel Co. President Chamberlain of the Canada Atlantic Company, and General Manager Harris were in conference with several vessel owners, but the understanding is that so far they have met with no success. The vesselmen say that boats which the Canadian people are after are not easy to find just now. They are looking for large boats, and the owners of such property find it more profitable just now to run their own vessels than to lease them to some company for a year. It is said that the Canadian company may yet be compelled to buy its boats.

Councilman John J. Smith, the representative from South Buffalo in the Common Council, is of the belief that the United States Government should take up the improvement of Buffalo river and make an appropriation for the widening and deepening of its channel. At his request representatives Alexander and Ryan will urge the appropriation at Washington. This week a formal resolution will be offered and adopted in the Common Council endorsing the proposition. Public Works Commissioners Healy and Boeckel, Mayor Diehl, President Haines of the Merchants' Exchange and leading vessel men are in favor of the proposition. Councilman Smith thinks \$50,000 or \$100,000 ought to be secured for work this year. The government makes appropriations for the care and improvement of the Chicago river and the Buffalo officials feel Buffalo river is entitled to the same consideration.

The efforts of the local correspondent of the Black Diamond, Chicago, extended from season to season, has at last been rewarded with a full report of the anthracite shipments by lake during the season of 1899, which is as follows in net tons and is actual and not based on custom-house estimates, as former figures have been. The shipment from Buffalo was 2,811,294 tons; from Erie, 606,594 tons; from Oswego, 426,728 tons; from Charlotte, 84,227 tons; from Fair Haven, 52,676 tons and from Sodus Point, 15,848 tons, a total of 3,997,367 tons. There was shipped through the Welland canal 71,872 tons of coal from Oswego. Add this amount to the total from Buffalo and Erie and it gives 3,489,760 tons shipped to points above Erie. Take the amount out of the Lake Ontario total of 579,879 and it leaves 507,607, the amount distributed to Lake Ontario and St. Lawrence river ports. It will be seen that another moderate cargo would have brought the grand total of all the anthracite shipped on the lakes in 1899 to a round 4,000,000 tons.

At the meeting of the Fire Board, held on Monday, the commissioners addressed a communication to the common council notifying them that the Union Dry Dock Company had refused to sign the contract for the construction of the new fire boat, and requesting that new bids be advertised for. The fire commissioners were anxious, for many reasons, to have the contract made and spared no efforts to that end. The form of contract presented to the Union Dry Dock Company for signature was that usually required in city contracts and was such as the fire commissioners deemed proper in this case. It was, however, rejected by the contractor, and the fire commissioners have taken steps to advertise anew for the construction of a fire boat and have deposited the forfeited check of the former bidder for \$1,000 with the treasurer in order that the amount thereof may be collected and deposited to the fund provided for the construction of a fire boat. It is not often that a shipbuilding company permits itself to be penalized in the forfeiture of its hard cash bond after making a competitive bid and in this case the Union Dry Dock Company must have good reasons for throwing up the contract.

Capt. John Baxter, of the light-house tender Haze, is now beginning to find out what has been palpable to scores of people long ago, and that is, that the tender has outgrown her usefulness, or rather that the district aids to navigation have become so numerous that the little craft is entirely inadequate for the service and should be replaced with a vessel at least double her size. Only a year or two ago there were no gas buoys to look after, but there are now twenty-five between Detroit and Ogdensburg, ten being in the St. Lawrence and two in Canadian waters at Point au Pelee. At one time all the gas had to be taken on at Detroit, but now a supply for the St. Lawrence is shipped by rail from Syracuse to Cape Vincent, where it is piped to the steamer direct. Her capacity is too small to admit of tanks of desired size being carried. The Light-House Service, is to the practical seamen one of the most important, beneficial and useful branches of the government, and one on which the water-borne traffic of the country eminently and actually relies upon. There is a vast stretch of coast line to take care of and properly conduct, yet, the Light-House Service is above reproach, even in details, strict discipline, punctuality in all goings and comings and a worthy service spirit rules the department from top to bottom. Congress, recognizing these facts, should be unanimous in voting liberal supplies for the maintenance of this very excellent department, and where tenders are found to be obsolete for any particular district, large modern bottoms should take their place.

DULUTH-SUPERIOR.

Special Correspondence to The Marine Record.

Capt. Alex. McDougall and Mr. A. B. Wolvin are in Detroit this week attending the annual meeting of the Lake Carriers' Association.

The Booth Packing Co. are willing to dispose of the steamers Dixon and Hunter with probably a view of replacing them by larger boats in the shore trade out of here.

The steamer Bon Ami went into winter quarters January 11. This is the latest date in the history of navigation on these shores of Lake Superior and her trips would have been continued still later but traffic fell off too much.

The new dry dock at West Superior has been completed and a force of about a dozen men are cleaning up the grounds. Another force of men is at work on the engine house and it is expected that it will be finished in a few weeks.

The tug Gladiator, owned by B. B. Moiles, of Saginaw, Mich., is said to have been sold to Whitney Bros., the West Superior contractors. The Gladiator is a large, powerful tug and Whitney Bros. have a very heavy scow, the Interstate, which requires a strong tug to handle to the best advantage.

There will be 300,000,000 feet of logs cut in Douglas county, Wis., this year for delivery at Superior, Ashland and Duluth. The Northern Pacific road will deliver over half of this amount to the Duluth and Superior mills. The St. Paul and Duluth has engaged a large consignment to be shipped to North Carolina, also for shipbuilding purposes to Lake Erie ports.

The campaign of the timbermen for pine in this northern country continues as strong as ever. Every piece of land with two sticks of pine on it is being picked up, and timber lands considered remote and inaccessible are being sought after and "cinched." All of which will undoubtedly increase the prosperity of northern Wisconsin and northern Minnesota very materially during the year to come.

Capt. James Prior, of the lighthouse station at Duluth reports that the lights were burned 2,783 hours and 6 minutes during the season of navigation. This is about an average season for the lighthouse, he says. The fog signal was blown a total of 653 hours and 15 minutes, which is above the average and the biggest record since the year of the Hinckley fire, when there was a great deal of smoke all over the Lake Superior region and particularly at the head of the lake.

The comparative table of the registered tonnage for the port of Duluth, compiled at the customs office, shows a very heavy increase last year over 1898. The total number of vessels registered last year were 220, as compared with 156 the year previous. The gross tonnage for the year was 108,890, an increase of 64,655 tons over 1898. Net tonnage is shown at 164,936 tons, while in 1898 the net tonnage totaled 109,237 tons. The average net tonnage for the year was 749.70 tons and 700.23 the year previous.

NAVAL RESERVE, TRAINING SCHOOL SHIP OF REFORMATORY.

Ex-Mayor Geo. W. Gardner, Cleveland, and who for several years was commodore of the Cleveland Yacht Club, started sailing on Lake Erie very early in life. If the writer's memory is correct, the ex-mayor stole away from his good home and shipped as chief cook and major domo on a ten-ton schooner. From this time on, a period which we might gently hint includes about half a century, Mr. Gardner has practically identified himself with marine interests and pursuits and he is still among us.

A marked feature throughout the career of Mr. Gardner has been the ever-abiding desire to see a training, school ship, or floating reformatory established at the port of Cleveland, having for its object the disciplining, training and teaching of a certain class of youths, who are in a measure permitted to run wild, either through the loss of parents or other guardians, poverty or other similar circumstances, not to mention that manly, honest class of ne'er-do-wells, who, in throwing off parental restraint, ask for and require a firmer hand. Such, for instance, have we learned that the school days of Admiral Dewey called for.

Mr. Gardner has worked in season and out of season to bring about the establishment of such an institution. Well advised legislation looking towards this end has been asked for at Columbus, but results have so far failed of development.

The Navy Department stationed last year at Detroit an old wooden navy ship for a practice and training vessel for the use of the Michigan naval reserves, and Mr. Gardner, believing that Ohio ought to meet with the same consideration as her sister state, addressed a communication on the subject to the Secretary of the Navy, to which he received the following reply:

WASHINGTON, D. C., Jan. 8, 1900.

"Sir: The receipt is acknowledged of your letter of Dec. 28, recommending to the department that a naval training station and training ships be established on the Great Lakes.

"The department wishes to extend its training system in every quarter where good material is available, and with this end in view would naturally select the Great Lakes as one field for the training service. During the past two years many men for general service have been recruited at different cities on the Great Lakes and there are now recruiting stations at Chicago, Detroit and Cleveland, where we are attempting to get the very class of which you speak in your letter.

"The department finds, however, that it is probably impracticable to establish a training station on the lakes, because a training station must have training ships attached to it, and it has been held that the department's action is restricted so far as placing training ships on the lakes is concerned. The number of vessels of war permitted to be built and maintained in these waters is prescribed by the agreement of 1817 between the United States and Great Britain. The department has been obliged, in view of this agreement, to reject all bids for the construction of vessels on the Great Lakes. This is one of the matters now before the joint commission on questions affecting the relations between Canada and the United States.

"I have read your letter with interest and I appreciate the time and thought which you have given to the suggestions which it contains, and I wish that circumstances would permit my acting upon some of them, for they are excellent. Very respectfully, JOHN D. LONG."

On receipt of this letter from the Secretary of the Navy, Commodore Gardner sent the following communication to the Plain Dealer, Cleveland:

"I inclose herein a reply to my letter to Secretary Long of 28th ult. You will note that the secretary would be quite disposed to extend the training system to the Great Lakes if he did not fear such action would conflict with the treaty of 1817 between the United States and Great Britain—even to the placing of training ships.

"I don't know much about the provisions of that agreement, but at the then early day there could not possibly have been any anticipation of the now immense importance of these Great Lakes, especially to our country, and of the corresponding needs for a continuance of a success.

"I was not aware that a training ship was considered strictly a war vessel. That agreement then probably provides against vessels equipped with guns and other war material being used on the inland lakes exceeding the extent of one such vessel to each government, which each now has—in the United States the ship Michigan, almost as old and

obsolete as is the treaty, and one for the Canadian government, which, like the Michigan, can hardly be dignified with the title 'a war-ship.'

"If for the purpose only of establishing schoolships and extending their usefulness, this old manner of agreement between United States and Great Britain should be abrogated and reciprocal privileges be adopted permitting such service, when great benefits to all concerned would accrue, and be so helpful in many ways and to many people.

"This is really so important a matter that there should be some organized effort made with the joint commission named so that the new agreement, which will be doubtless made, should cover permission to both governments, at individual discretion, to establish not only training ships on the Great Lakes, and authority to construct same there, as well, but naval shore training schools, which are a part of the system.

"An opportunity should be sought to impress upon the United States portion of this joint commission the necessity and value to our country for incorporating in the new agreement the privileges suggested herein, and now is the time to take action.

"I do not know whether the agreement referred to will prevent obtaining a practice ship for our Naval Reserve corps or not, but it is a fact that the government has provided a practice ship for the Naval Reserve corps of the state of Michigan, and that ship is now located at Detroit, having been sent there from the coast, so it would seem possible there is nothing in the agreement to prevent the federal government from giving a ship to the state of Ohio for use of the Ohio Naval Reserves, equipped and manned to a certain extent by the government. Any further expense attending the use of such vessel might then possibly have to be borne by the state, but there is no good reason why the Great Lake interests and the large area of country surrounding them should not receive the same benefits from the federal government that is granted to the salt water coast portions of the country. GEORGE W. GARDNER."

The recent action taken in this matter by Mr. Gardner, as well as the meritorious obstinacy which he has exhibited in sticking to the subject, is highly commendable, and will, no doubt, sooner or later, be successful of accomplishment, in one form or another.

The RECORD would, however, request of the advocates of such an institution, some degree of reasonableness. Formerly it was understood that the city of Cleveland, and, or, for that matter, the state of Ohio, would be the better for having a school ship or reformatory for refractory youths, orphans, outcasts and waifs, as Capt. Benham, deputy collector of customs at Cleveland, advocated a day or two ago: "Instead of sending young men and boys who have committed some misdemeanor and whose characters are besmirched, to the workhouse, jail or reform farm, let them be placed on a school ship and made to go through the rigid naval discipline, then most of them would come out of it men of good character, amenable to discipline and all proper restraints of law, when a workhouse sentence might make them hardened criminals."

In seeking for the establishment of an institution to be conducted on the foregoing lines, the advocates and friends of the measure should not get confused regarding what they really do want. In the correspondence which has passed between the Secretary of the Navy and Mr. Gardner, a practice ship for the Ohio Naval Reserves is asked for, at the same time training ships are advocated and the establishment of school ships commended. Evidently Mr. Gardner minimizes, if not totally eradicates, the reformatory principles so long and sturdily upheld by him in the past.

If we take our caption and note the different uses to which each craft should be applied it may help to clear the situation: Naval Reserve; Training; Schoolship; Reformatory.

First—An obsolete U. S. S. granted by the Navy Department as a drill and practice ship for a body of unusually intelligent and affluent youths who have formed themselves into a corps of Naval Reserves and require quasi-military instruction and discipline.

Second—A ship like the recently built Chesapeake, or the lately commissioned U. S. S. Hartford, devoted particularly to the naval training of apprentices, landsmen and exclusively to the naval training of apprentices, landsmen and others.

Third—A floating structure resembling as near as possible a public school, where is also taught the details, duties

and discipline observed by seamen in the United States Navy.

Fourth—A good roomy hull, preferably a condemned U. S. S., suitably fitted up as a temporary and disciplinary home for youths grown callous to the rights of others. In a word, a reformatory where strict rules are formulated to eradicate the bad and encourage the best traits of human nature, with the object of mentally reforming the habits, customs, minds and morals of the careless, neglected or evil-disposed while held in duress.

Much more might be advanced by way of pointing out the differences existing between the four requests rolled into one; but suffice it to say at this time that there is a wide difference between a drill and practice ship for the use of State Naval Reserves and a reformatory ship for refractory, and, lawless or obstinate, uncared-for youths who desire to learn the duties of a seaman or other ordinary callings.

THE NEW CANADIAN GRAIN ROUTE.

The conviction that the new, all-Canadian waterway from Lake Superior out of the St. Lawrence will begin next spring to be the great grain route from the west to the Atlantic seaboard was what the members of the New York state commerce commission heard expressed from beginning to end of their recent western visit to Chicago, Minneapolis, St. Paul, Duluth and other points, for the purpose of interviewing prominent shippers and representatives of the transportation interests. The enlargement of the Erie canal, which will cost many millions, is declared by the business men of New York city and Buffalo to be an absolute necessity, but no enlargement of the Erie canal can do away with the fact that the Canadian route will be the most direct and most economical for export to Europe. The energy of the Dominion government in hastening to completion the construction of this route and in taking action to provide it with the necessary terminal facilities is receiving in New York the most eloquent and sincere of tributes, in the form of an agitation for immediate effort towards preventing, as far as possible, the diversion of the traffic of the Great Lakes to the St. Lawrence outlet. The newspapers of the United States, especially in the west, are outspoken in their acknowledgment of the foresight and energy shown by the Laurier administration in carrying out this great national work, which will advance immensely the growth of the Dominion's prosperity, making farming in Manitoba and the northwest more profitable by facilitating the transportation of grain to the world's markets.—Winnipeg Free Press.

In the news columns of today's Star a dispatch from New York quotes the Press of that city as stating that the state canal commission will recommend the expenditure of \$60,000,000 on the waterway system. This report may be true, though the Press is not distinguished for the accuracy of its columns, and it is not at all unlikely that some such proposal will be made, for not only is New York alive to the importance of its inland waterways as a competitor of the railways, but the people of the Empire state are fully aware of the danger of Canadian competition, and are determined on a fight to retain intact the grain traffic from the western wheat fields.

Canada, however, need feel no alarm at the proposals of the people of New York. All the natural advantages lie with the Canadian route. By the time New York has spent \$60,000,000 on its ditches, the Canadian lake and river route will have captured its share of the business, and once we get it, we will know how, and be able to hold what we have. It will take many years to put New York's canals on an equality with ours, and if the expenditure of \$60,000,000 were to accomplish that result, Canada would not begrudge the money to go our neighbors one better in the improvement of our present excellent system.—Toronto Star.

NOTICE has been sent out from the head office of the appointment of W. L. Mercereau of Ludington, Mich., as superintendent of the fleet of six steamers operated by the F & P M. He will have headquarters at Ludington.

AN entire page of the Scientific American supplement of the issue of January 6 was given up to illustrations and description of the mammoth new clam-shell ore unloading machine on the Carnegie dock at Conneaut. The description says the first of the type has recently been installed at Conneaut harbor which Andrew Carnegie has announced his intention of making the largest ore unloading port in the world.

THE DETROIT SHIP BUILDING CO.

The company which is at present organized under the name of the Detroit Ship Building Co. has always kept exact records of its work on each vessel built, and it can today give as detailed an account of the day's work done and the cost of material on the first schooner built in 1872, as of the last large steel cargo steamer that left the ways in 1899. Its records would furnish a very complete history of the evolution of the lake passenger and freight carriers of the present day. The history of shipbuilding on the lakes is given, in epitome, by the history of the work commenced at the foot of Orleans street in Detroit and carried on there and at Wyandotte.

In 1852 Campbell & Co. launched from the yard at the foot of Orleans street the first large vessel built in Detroit. They continued the business in a moderate way till 1862, when John Owen came into the partnership, and the firm became Campbell & Owen. The Campbell interest was sold in 1870 to S. R. Kirby, and in 1872 the Detroit Dry Dock Co. was organized, with a capital of \$300,000. The firm retained its old name until 1899, when it was reincorporated as the Detroit Ship Building Co., with a capital of \$1,450,000. It is now part of the consolidation known as the American Ship Building Co., but has not lost its identity in name nor in fact. It makes contracts and conducts the business according to the best judgment of its officers, who are at present as follows: Alexander McVittie, president and manager; William C. McMillan, vice-president; M. E. Farr, secretary and treasurer; Frank E. Kirby, consulting engineer; C. B. Calder, general superintendent; John D. Langell, superintendent of dry docks.

In 1877, five years after its organization, the Detroit Dry Dock Co. absorbed a small shipbuilding plant at Wyandotte, and subsequently took in the Clark drydock near the foot of Clark avenue, Detroit. By absorption and expansion it has not only included all the large shipbuilding interests of Detroit, but has brought them up to a magnitude not rivaled by any yard on the lakes. Its plant now includes engine and boiler shops on Orleans and Atwater streets, the old Detroit sheet metal and brass works, the yard and drydock at the foot of Orleans street, the drydock and yard at Clark avenue, and the yard and shops at Wyandotte.

The Orleans street yard and its drydock, 385 feet long, are devoted to fitting out vessels, docking, repairing and installing the boilers, engines and machinery plants. Clark's drydock and yard are devoted to docking and repairing, and the Wyandotte yards and shops to the building of steel vessels. The capacity of the latter has been more than doubled within the past two years, and great improvements have been made in the machinery and appliances used. Among the latter is the installation of a system of pneumatic tools worked by compressed air, and a huge traveling crane, 500 feet long and with a lifting capacity of 12 tons.

The company last year turned out work to a value approximating \$2,500,000. It opens 1900 with vessels under contract to occupy all four of the building berths at Wyandotte, with a large amount of work engaged ahead at both the other yards, with 1,500 hands employed, a very large proportion of them skilled workmen, and with every prospect of an output exceeding \$3,000,000 for the year.

The last two vessels launched at Wyandotte were sister ships, the Angeline and the Admiral, each 435 feet long, and with carrying capacity of 6,300 tons of iron ore.

When the first iron tug was launched at Wyandotte, more than a quarter of a century ago, the conclusion was reached "to buy the best material and build the best construction," a method which has been faithfully followed ever since. Pursuing this method, the company is not in the field for cheap contracts. Its requirements exact more in many respects than Lloyd's rules, and embody what long experience has determined necessary for a staunch steel vessel.

The nearly century and a half of vessels that have already gone into service from the hands of these builders have included nearly every type that has been standard in the lake marine within the past quarter of a century—tugs, two, three and four masted schooners, wooden cargo steamers, passenger ferry boats, the largest car ferries, ice crushers, iron, steel and composite freight carriers of varying tonnage, and the finest side-wheel passenger steamers that float the lakes.

The first successful ice crusher was the St. Ignace, designed by Frank E. Kirby and built by the Dry Dock Company for service in the Straits of Mackinac. There

were two features which gave this craft great efficiency. The vessel has great weight as well as power, and is so modeled that her oaken bow presses the ice downward by its weight, while a bow propeller crushes it and throws it backward under the vessel. This was so successful for the purposes required that it was followed by another, the Sainte Marie, which has proven even more effective. The latter has gone through 24-inch blue ice, in which she has been started and stopped without reversing the engine. The fame of these ice crushers became widespread, and the Russian government sent agents to Detroit for the purpose of studying their workings. That country has since adopted the idea and copied their model for vessels to be used in its own frozen waters.

The Detroit Ship Building Co. is about the only one on the lakes that builds first-class side-wheel steamers. The Frank E. Kirby, the fastest passenger steamer in these waters, was of their construction; so were all the steamers of the Detroit & Cleveland line, and many others.

The fame of the company's designer and consulting engineer, Frank E. Kirby, extends to all shipbuilding ports in the country, and his services were sought by the government during the progress of the Spanish war. It was he who planned the devices for ventilation in the transports Grant, Sherman and others which were used for conveying troops to Manila. These plans were so complete and well arranged as to call for the admiration of both army and navy officers, and it is safe to say that no army was ever before conveyed such a distance through tropical waters with as little discomfort and as little illness.

EVERYBODY has a pencil in his pocket—take yours out and look at the stamp. If it reads Dixon's "American Graphite" S. M., whether round or hexagon shape, all right; if not, send out and get such a one. The leads in these pencils—we mean the "American Graphite" S. M.—are simply superb, strong, tough, black, yet smoother than silk, smoother than finest velvet. They write superbly; they make writing a pleasure. It is pleasant to mark with them, they are so agreeable to the touch. Take your pencil out and look at the stamp, if not a Dixon S. M., send out and buy one; you won't regret it.

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SPECIAL ATTENTION GIVEN TO SHIPBUILDING MATERIAL.

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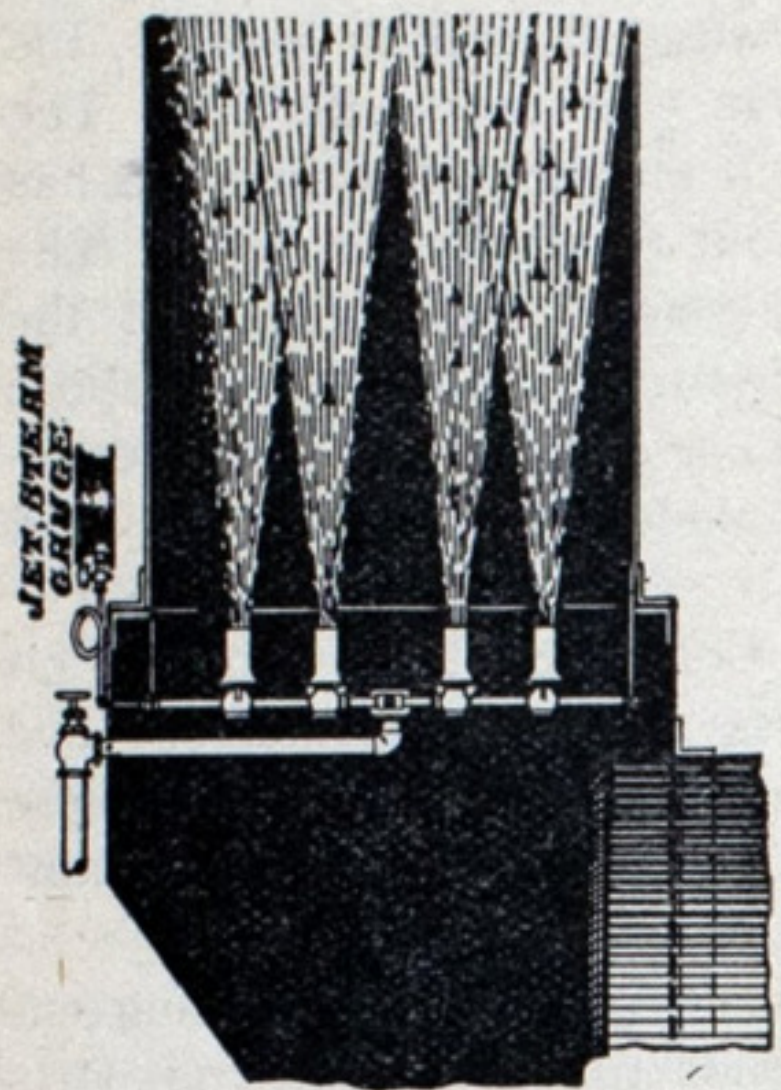
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Powerful. Economical. 15 to 25 per cent increase in power.



Gives draft equal to a fan. Can be applied to any stack and will greatly increase the draft with a minimum amount of steam.

Cut on the right shows a section of Jet Castings, which are attached to Spider in stack, as shown by cut on the left.

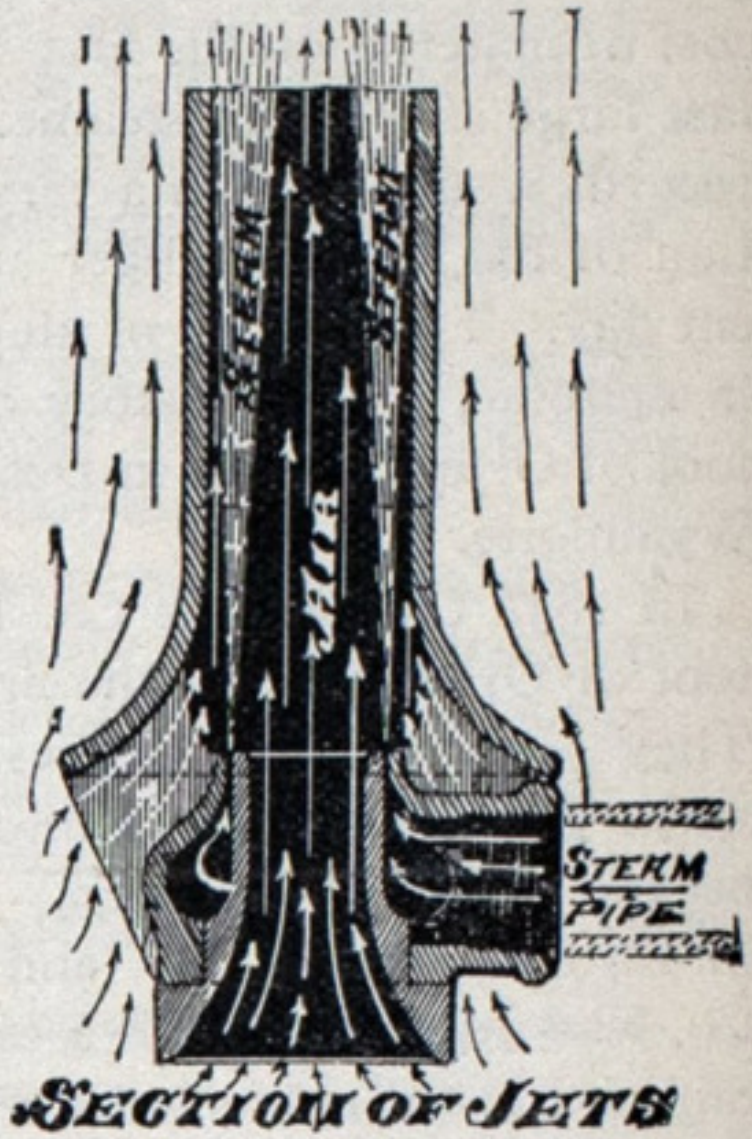
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O. L. JENKS, Vice Pres. and Treas.

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Foot of Lincoln Ave.,

Port Huron, Mich.

STEAM WINDLASSES, CAPSTANS AND STEERING APPARATUS.

PROCEEDINGS OF THE ANNUAL MEETING OF THE LAKE CARRIERS' ASSOCIATION.

(CONTINUED FROM PAGE 23.)

hereby authorized and directed to cause to be constructed a revenue cutter of the third class, at a cost not to exceed the sum of fifty thousand dollars (\$50,000), under his direction, for service on the St. Mary's river, in the State of Michigan, for the purpose of protecting the revenue and enforcing the rules of navigation on said river.

Second: That the said sum of fifty thousand dollars (\$50,000), is hereby appropriated out of the treasury of the United States of America for the purpose above specified.

JAMES McMILLAN, President.
C. E. BENHAM, Secretary.

A resolution was adopted requesting Congress to appropriate \$50,000 for a revenue cutter of the third class for patrol service in the "Soo" river.

The convention endorsed the bill now before Congress known as the Wadsworth bill, providing for the reorganization of the Weather Bureau, as drawn up by Prof. Willis L. Moore, Chief of the Weather Bureau.

The motion also prevailed as presented by John Shaw, Esq., favoring a division of the United States Court, district of Western New York, and the establishing of an admiralty court in Buffalo, so that marine suits can be heard there instead of at Utica, as at present, in accordance with a resolution adopted last year providing for it.

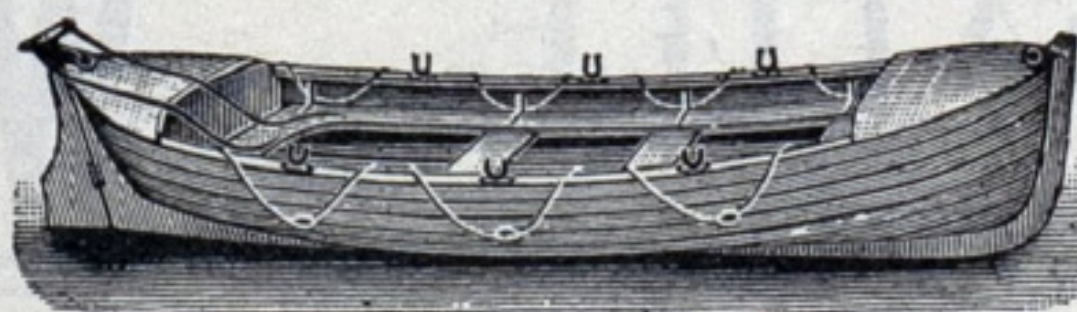
On motion of Capt. Thos. Wilson, duly seconded, the Secretary, Treasurer, Counsel and Shipping Masters were re-elected for another term of one year.

Mr. Coulby made a motion, duly seconded and carried, that a vote of thanks be tendered to Maj. Handbury, Col. Lydecker and Capt. A. B. Davis, for giving their time and information to this body and that when the committee to be appointed by the chair to go to Washington to take up with the several government departments the subject matter of improvements to the waterways, the Secretary of War be invited to kindly arrange to have Col. Lydecker present to give the committee the benefit of his information and recommendations on the subject. After the consideration and discussion of several miscellaneous matters the meeting adjourned at five p. m. to meet in one year at Detroit.

A LIFE-SAVING INDUSTRY.

It is an excellent occupation, a beneficent calling and an elevating business to be connected with an industry devoted to the manufacture of life-saving appliances and similar devices.

David Kahnweiler's Sons, and the originator of the house or firm, can count upwards of twenty-eight years engaged in



this laudable pursuit, and their office at 437 Pearl street, New York, is known as a depot for life preservers, life belts, cork jackets, ring buoys, etc. In addition to these, the manufacture of which is approved by the government inspectors, the firm build metallic life boats and rafts, line throwing projectiles and life-saving devices of every description.

THE CRANE VALVES.

Among the products manufactured by the Crane Co., of Chicago, which are especially suitable for use on steam vessels, is a complete line of high pressure gate, globe and angle valves.

These valves are very heavy and great care has been taken in design and construction, the metal being distributed so that the greatest strength is found where it is most needed.

Every valve is rigidly tested to 800 lbs. hydraulic pressure before shipment and guaranteed for 250 lbs. working pressure.

The working parts of the iron valves are faced with a composition known as Crane's hard metal, which is nearly as hard as steel and wears longer than any other gun metal composition known, so hard, in fact, that it has to be worked under the tools with oil.

The metals are under the care of an analytical chemist who makes daily tests, both chemical and physical, to determine the quality.

The gate valves are of the wedge gate pattern and are exceedingly heavy.

The Crane copper disc valve has been proved to be very satisfactory for high pressure work. The disc is made of soft copper, turned in a lathe. One of the merits claimed for this disc is that it expands and contracts in exact ratio with the body of the valve, thus making a tight seat at all temperatures.

Crane Co. issues a very convenient and useful pocket catalogue of its products, containing illustrations and prices, which is sent on request.

COST OF TRANSPORTATION.

The following, showing the cost per ton per mile of running a modern cargo steamer, with coal at 20s. (\$4.87) per ton (from Sell's Commercial Intelligence of July 22, 1899) is of interest:

It is a well-known fact in connection with steam navigation that a modern cargo steamer, with coal at 20s. (\$4.87) per ton, is able to carry 100 tons of paying load 1 mile for 0.377d (0.76 cent) for coal alone, or 0.78d (1.77 cents) if the cost of working the ship and insurance be included. Railway transport is considerably dearer in fuel and in everything else. To haul 100 tons of paying load for 1 mile on a railway line at ordinary coal prices, costs 0.57d (1.15 cents) for that item alone, while the whole working cost, taking it at 50 per cent of gross receipts, would be 1.1d (22 cents) per mile for haulage. Traction engines cost about 3d. (6 cents) and horse haulage about 9d. (18 cents) per ton per mile under normal conditions. But until 1854, marine engines had never been made which consumed less than 4½ pounds of coal per indicated horse-power per hour, which is practically three times as much as the fuel consumption of modern practice.

Atty.-General Griggs has ruled that on bills of lading, receipts, manifests and other similar documents issued by railroad companies for the receipt of goods to be transported by rail from any place in the United States to Canada, a tax stamp of 1 cent is payable under the war revenue act, and that no tax is payable thereon under the clause relating to goods exported from a port or place in the United States to any foreign port or place.

THE NEW YORK MARINE SOCIETY PETITION CONGRESS.

To the Senate and House of Representatives of the United States in Congress Assembled:

The Marine Society of New York, composed of American Ship Masters, at its 130th annual meeting January 8, 1899, respectfully requests your earnest support of the "Shipping Bill" now before your honorable bodies, for the following reasons:

That American shipping in the foreign carrying trade carries but 9 per cent. of the exports and imports of the country, as against its former highest position of 85 per cent. of the country's foreign trade.

That a Merchant Marine is a Naval Reserve, as has been demonstrated in both our Civil and Spanish wars.

That the vessels of a country, under its flag and carrying its mails, are an advertising medium for the sale of the products of the country in the markets of the world. The demand for surplus products of farm, workshop, and mine is thereby increased.

That two hundred millions of dollars are annually paid by American citizens to foreign ship owners as freight and passage money.

That this money goes out of the country in hard cash, the larger part of which should be retained for distribution to reward American labor.

That, "In shipping all industries are united," all trades being represented in the construction of a ship, as also in its maintenance and navigation.

That it is essential that the country shall have shipbuilding plants, artisans, engineers and sailors for its use, defense and safety in the event of war.

That this bill is best calculated to promote the development and distribution of the products of American labor by the extension of the Merchant Marine of the United States, and to establish thereby more intimate commercial intercourse with other countries.

VESSELS OF THE REVENUE CUTTER SERVICE.

Algonquin, Capt. O. S. Wiley, Baltimore.
 Bear, Capt. Francis Tuttle. San Francisco, Cal.
 Boutwell, Capt. J. W. Howison. Newbern, N. C.
 Chase, Capt. D. A. Hall. Charleston, S. C.
 Colfax, 1st Lieut. J. C. Moore. Baltimore, Md.
 Corwin, Capt. J. A. Slamm. Tacoma, Wash.
 Chandler, Lieut. F. G. F. Wadsworth. Boston, Mass. Harbor duty.
 Calumet, Lieut. J. B. Butt. New York, N. Y. Harbor duty.
 Dallas, Capt. H. D. Smith. New London, Conn.
 Dexter, Capt. W. H. Hand. New Bedford, Mass.
 Forward, Capt. I. C. Mitchell. Baltimore, Md. Repairing.
 Fessenden, Capt. D. B. Hodgson. Detroit, Mich.
 Galveston, Capt. H. T. Blake. Galveston, Texas.
 Golden Gate, 1st Lieut. A. Buhner. San Francisco, Cal. Harbor duty.
 Gresham, Capt. T. D. Walker. New York, N. Y.
 Grant, Capt. D. F. Tozier. Port Townsend, Wash.
 Guthrie, Lieut. E. C. Chavtor. Baltimore, Md. Harbor duty.
 Hamilton, Capt. W. D. Roath. Savannah, Ga.
 Hudson, Lieut. C. C. Fengar. New York, N. Y. Harbor duty.
 Manning, Capt. W. H. Roberts. Left New York, Jan. 8, under orders for San Francisco.
 Morrill, Capt. A. B. Davis. Milwaukee, Wis.
 McLane, Capt. G. E. McConnell. Port Tampa, Fla.
 Manhattan, Lieut. W. A. Failing. New York, N. Y. Anchorage duty.
 McCulloch, Capt. W. C. Coulson. San Francisco, Cal.
 Nunivak, Lieut. J. C. Cantwell. Fort Hamlin, Alaska.
 Onondaga, Capt. O. C. Hamlet. Norfolk, Va.
 Perry, Capt. W. F. Kilgore. Astoria, Ore.
 Rush, Capt. W. J. Herring. San Francisco, Cal.

Seward, Lieut. A. P. R. Hanks. Mobile, Ala. Harbor duty.

Smith, Lieut. C. T. Brian. New Orleans, La.
 Thetis, Lieut. W. H. Cushing. San Francisco, Cal.
 Windom, Capt. G. H. Gooding. Baltimore, Md.
 Winona, Capt. J. B. Moore. Mobile, Ala.
 Woodbury, Capt. J. Dennett. Portland, Me.

EASTERN FREIGHTS.

Messrs. Funch, Edye & Co., New York, in their regular eastern freight report to the RECORD, state as follows: While our list of charters shows some numerical improvement over that of the preceding week, this is based on general business from the coast. Our great staples continue in limited demand, although a few more fixtures have been effected for cotton; in the majority of cases at a decline in rates. At the same time the offering of tonnage is restricted, and the anomaly exists of charterers having to take vessels at figures which the underlying berth freights will not cover.

There is a fair demand for sail tonnage, but owing to the limited supply, only very little has been accomplished since our last report. Our list of charters is mainly composed of the fixture of several vessels for case oil to the Far East and of a couple of oil vessels for Europe, all at about former rates. In other lines we have nothing new to report, but would mention here that the demand for coal tonnage to foreign ports is increasing, although, on account of the high rates prevailing in the coasting trade, it is extremely difficult to secure vessels for deep water business at anything like reasonable figures.

THE German Training Ship Society has been formally organized under the presidency of the hereditary prince of Oldenburg, in the presence of representatives of the shipping and commerce societies. It will start with the equipment of one such ship.

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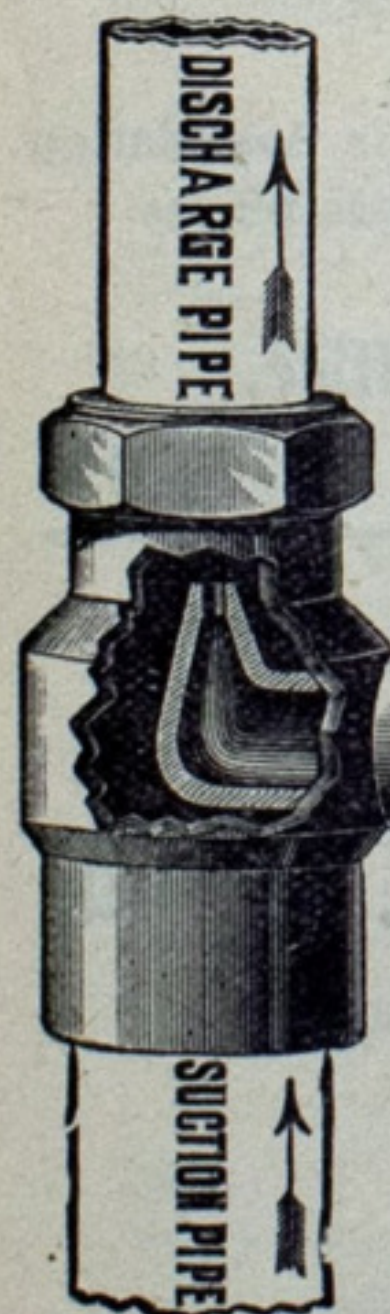
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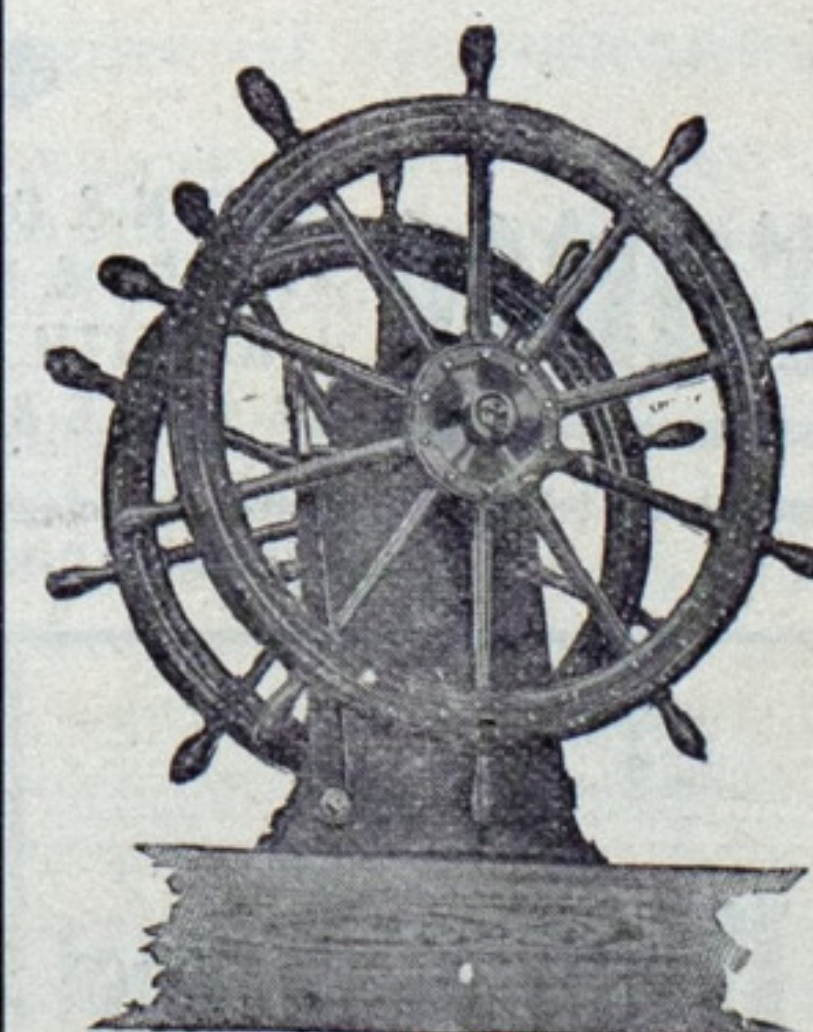
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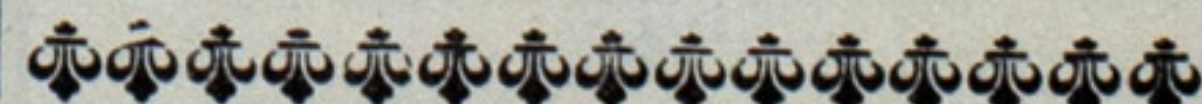
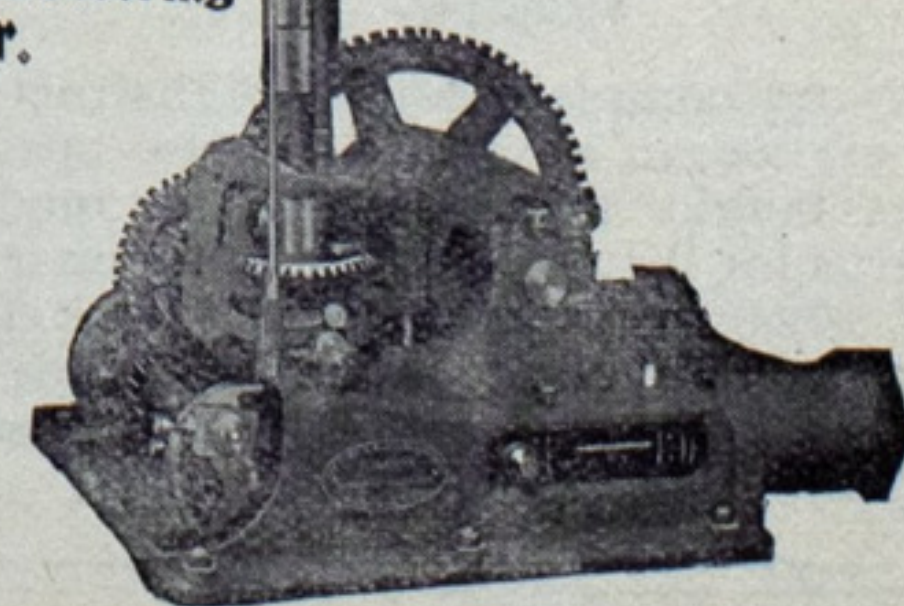
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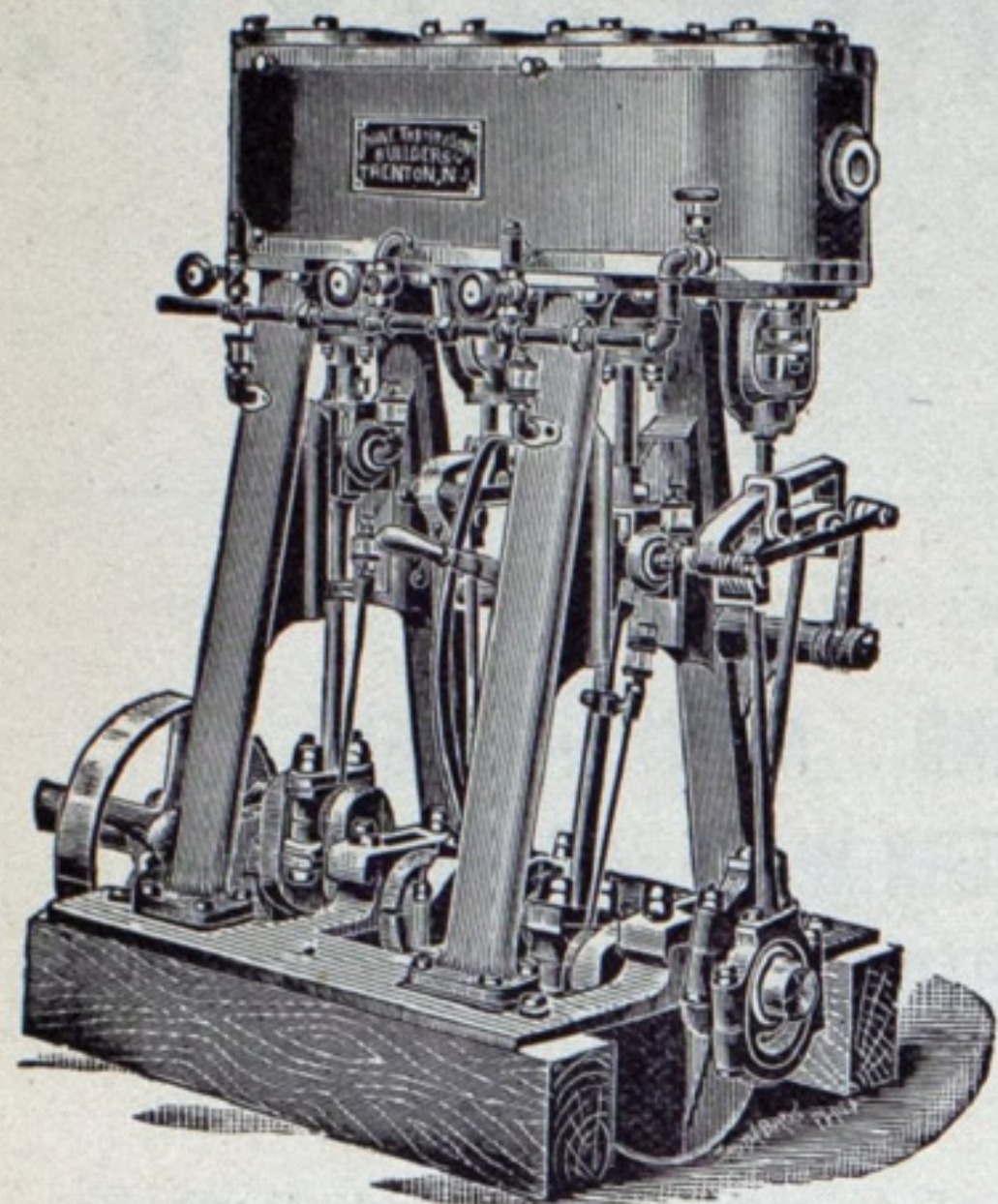
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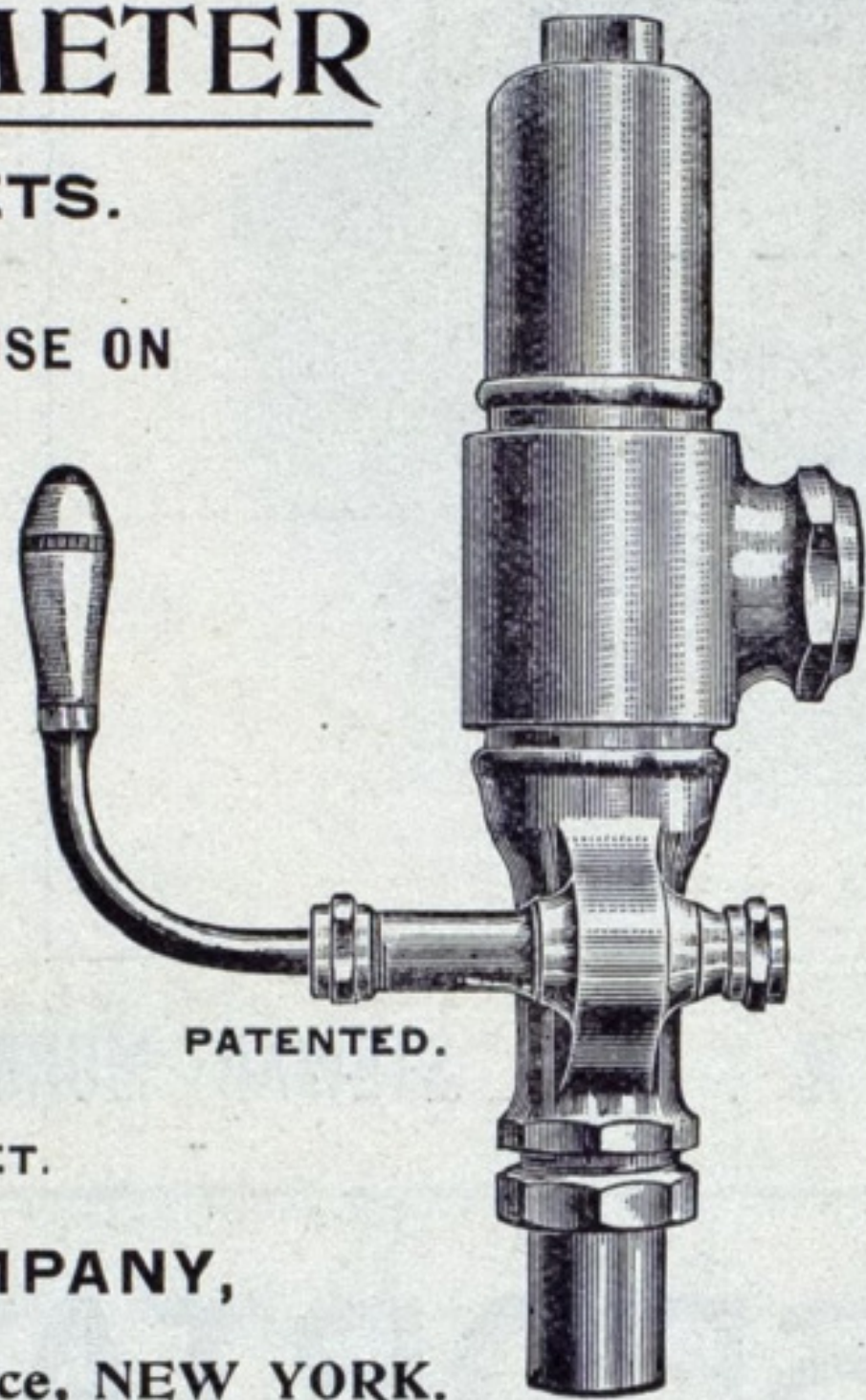
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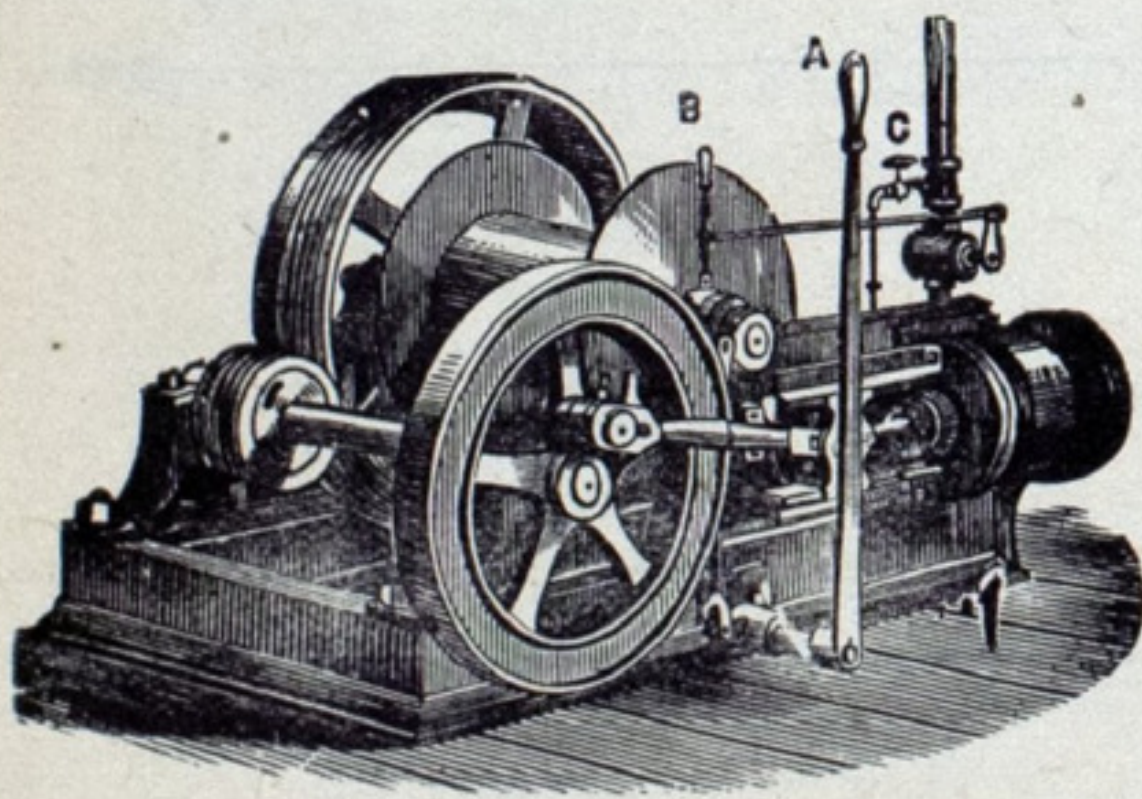
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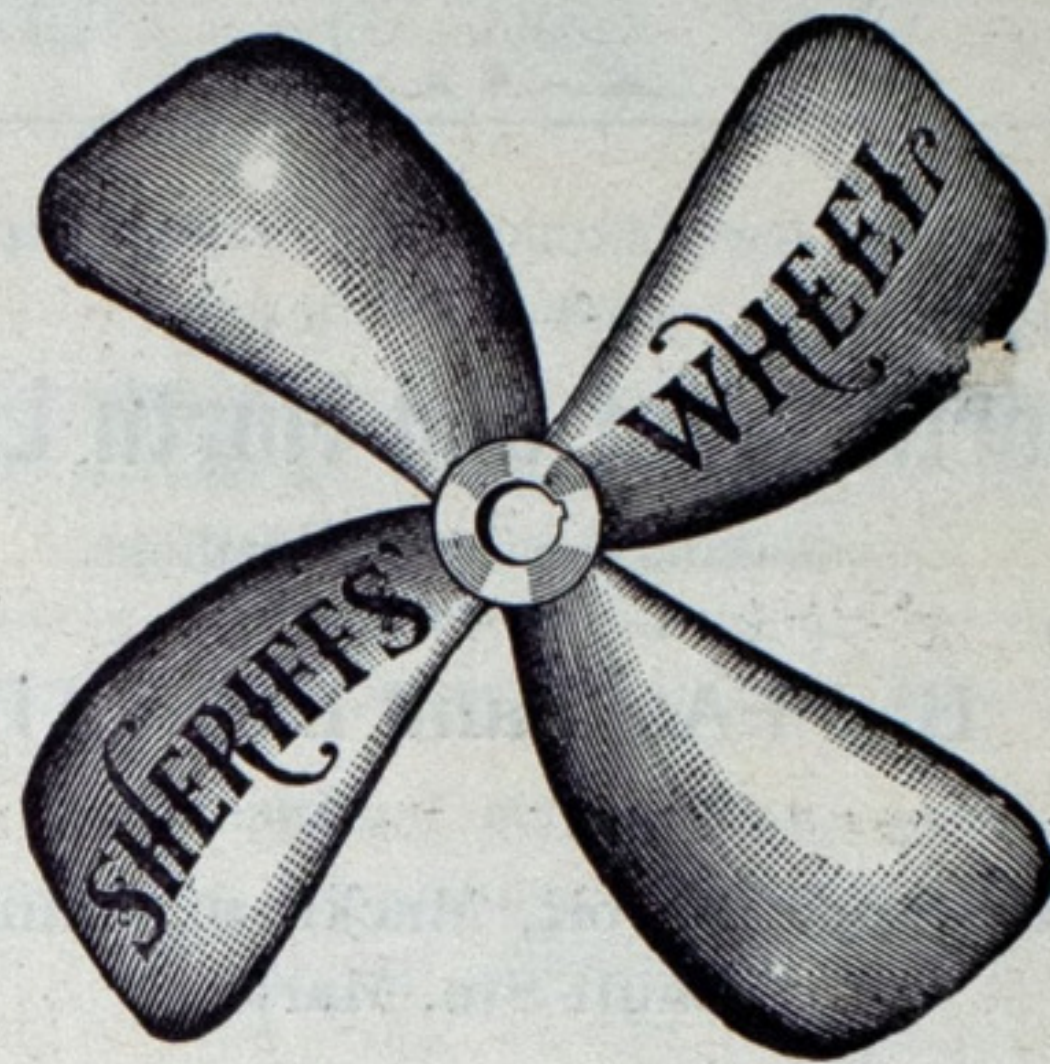
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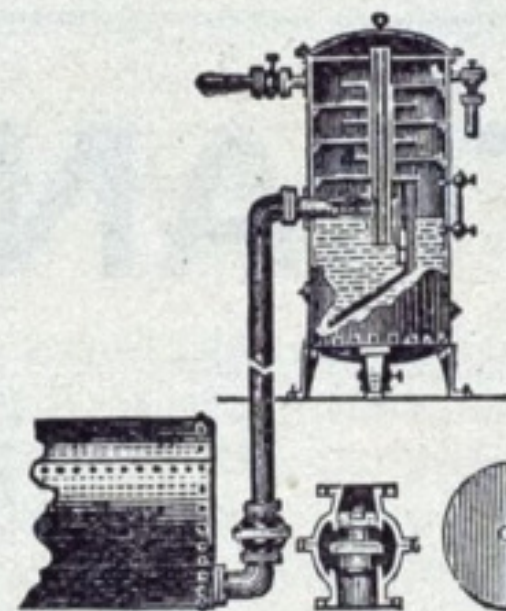
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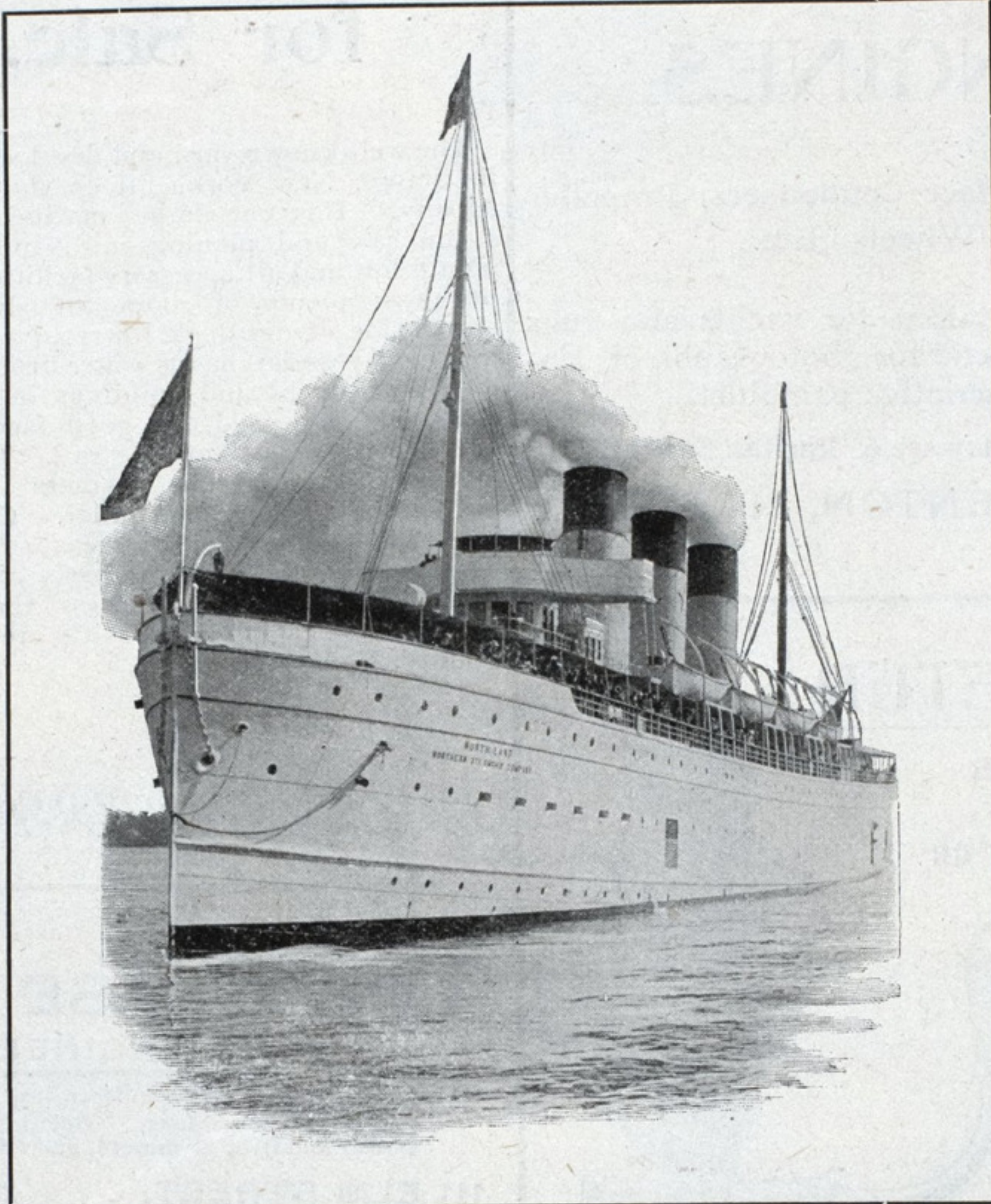
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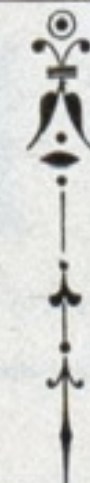
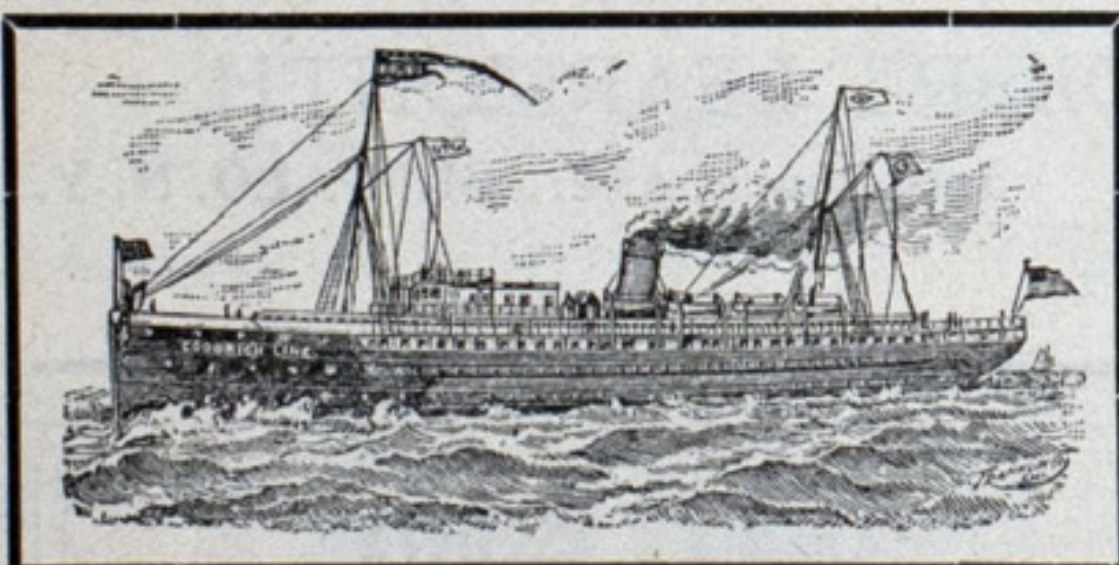
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